The OIL and GAS JOURNAL
PRODUCING REFINING MARKETING

VOL. 22. No. 19 TULSA, OKLAHOMA, OCTOBER 4, 1923

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Mid-Continent Drops Below Million Bbls.

Loss in daily production in United States week ending Sept. 29, 14,654 bbls.

Production of Entire United States Continues to Decline. Smaller Fields in California Register Slight Increase.

Average daily production in United States week ending Sept. 29, 2,244,285 bbls.

By Andrew M. Rowley

Production of crude petroleum in the Mid-Continent area of the United States dropped below an average of 1,000,000 barrels a day during the past week for the first time in recent months when the average daily output was 998,790 barrels, a decrease of slightly more than 25,000 barrels daily as compared to the previous week. This decline is due to a general curtailment of new operations which has resulted in a gradual falling off in the major producing areas. The Powell Field in Texas showed a decline of more than 11,000 barrels daily, while Oklahoma continued its downward trend, registering another drop during the week.

The production of all fields in the United States showed a decline of 14,654 barrels daily. California increased its output 4,000 barrels daily due to a greater production of the smaller fields, Santa Fe Springs, Long Beach and Huntington Beach recording the same grand total as for the preceding week, although Santa Fe Springs was down 5,000 barrels and Long Beach up a like amount.

Oklahoma

While the production of Oklahoma continues to show a steady decline, the development of the Wewoka Field in Seminole County gives promise of much new production when conditions warrant the full quota of operations which, undoubtedly would now be in progress under other conditions. Up to this time nine wells are producing from the Smith or 3,100-foot sand and another from an 1,850-foot level, the output of these wells having remained steady at between 14,000 and 15,000 barrels daily for several days. An indication that much production may be found in Osage, Tulsa, Washington and Creek Counties with renewed drilling activities is the bringing in by H. D. Glidden and Munn Brothers of No. 3 Mackey, Section 28-20-12, on the northwest edge of Tulsa. The oil pay was reached at 2,015 feet, being the Wilcox sand, and when 15 feet in the sand, the well flowed 300 barrels in 12 hours. New work in Oklahoma continues to decline. The number of wells shut down now exceeds those actively in operation. The production of Burbank and Tonkawa continues to decline. Operations are at a minimum in these fields while storage at Burbank is approaching the 10,000,000-barrel figure.

East Central Texas

The record of the Burbank Field in Oklahoma in producing approximately 5,000 barrels per acre, an achievement regarded as a feature in oil field development in Oklahoma, has been equalled by the Powell Field in Texas, that area having produced up to the first of this week about 5,000 barrels per acre developed. The difference between Burbank and Powell, however, is that in the former field, wells were drilled on an average of about one well to 10 acres while at Powell the wells are drilled about 300 feet apart, which gives each well slightly less than five acres to draw from. Production at Powell slumped somewhat during the past week, the average daily output being 168,350 barrels as compared to 179,500 barrels for the week before. The output of the field dropped still further on last Saturday and Monday of this week. Wells in the Powell Field decline rapidly, due partially to close drilling. What this decline amounts to may be judged from the fact the Humble Oil & Refining Company completed 63 wells with a total initial production of 206,967 barrels. Last Friday the output of these wells totaled 51,768 barrels. In the same class are the completions of the Humphreys Oil Company, which totaled 185,650 barrels initial and which were producing 31,417 barrels at the end of last week. There were a number of good completions in the field during the past week, the Gulf Production Company's No. 4 Murchison, Barry Survey, flowing 2,400 barrels initial.

California

While an increase of 4,000 barrels daily was recorded by California during the past week, this increase came from the smaller fields of the State, the output of Santa Fe Springs dropping 5,000 barrels and Long Beach going up a similar amount, while Huntington Beach remained stationary. The gas pressure is said to be passing fairly rapidly in the flush fields, while the town lot drilling at Santa Fe Springs has resulted in a decline in output of wells in that section. Long Beach, on the other hand, is increasing as deeper sands are being tapped and no immediate decline there is expected. Considerable interest is being shown by operators now in the field at Torrance and the one at Compton. An important test being drilled in the latter district is the Union Oil Company's well on the Rosecrans tract. Should it be a producer, a town lot development there is expected. There are about 150 wells drilling at Santa Fe Springs. Unless about 20,000 barrels of new production a day is brought in each week, it is expected that field will show a material decline in output by the end of the year, it being estimated it may drop to 250,000 barrels a day by that time. Completions in the field indicate the flush production is falling, the largest well brought in during the week being the Associated Oil Company's No. 3 Clark, which flowed 4,200 barrels. The same company's No. 6 Clark, which was put on production last week, was killed because of apparent bottom water, the well flowing about 4,000 barrels of fluid, 60 per cent water. The bringing in of wells from a deep sand at Long Beach is responsible for the increase in production there. During the past week the General Petroleum Company completed No. 3 Clark, good for 3,150 barrels at 4,918 feet. There were 10 wells completed in the field during the week for an initial output of 17,250 barrels. Huntington Beach is expected to show a decline next week with an estimate the field will drop to a production of about 75,000 barrels by the first of the year.

Gulf Coast

Production of heavy gravity oil in the coastal pools is gradually declining, it being estimated the output coming within the definition of Grade A is between 75,000 and 80,000 barrels daily, or the lowest in four years. Operations in the various pools are curtailed to the limit, the only active sections now being Orange and Hull and even there the work is only 60 per cent normal. Work in the Orange Pool consists mainly in deepening wells.

Wyoming

Unusually severe storms and flood conditions in the oil fields of Wyoming during the past week have caused great loss to the oil companies, pipe lines being broken and thousands of barrels of oil lost through inability of the companies to reach gate valves which were under water. Pumping stations were flooded, bridges washed out, oil fields isolated and field operations in many sections out from Casper brought to a standstill. The Senate investigation of the Teapot Dome lease to the Mammoth Oil Company will open again on October 15 and geologists have been investigating the structure to make a report to the investigating committee. The Producers & Refiners Corporation is preparing to drill a wildcat test about 7 miles north of the Colorado-Wyoming line and about 60 miles south of Rock Springs in Sweetwater County.

Louisiana-Arkansas

Eight producers and three dry holes were completed in the Union County area of the Smackover Field during the past week. In the Louann area,

(Continued on Page 208)

PRODUCTION IN THE UNITED STATES

Estimated daily average production in the oil fields of the United States for the week ended September 29, and a comparison with the previous week follows:

Field	Sept. 29	Sept. 22
Oklahoma—Northern Fields:		
Tonkawa	55,649	58,614
Burbank	99,416	101,525
Other Osage Fields	29,650	29,875
Cushing and Shamrock	24,490	24,480
Bristow and Eastern Bristow	47,200	51,475
Northern Miscellaneous	84,670	84,675
Southern Fields:		
Healdton	17,015	17,025
Hewitt	21,500	21,650
Southern Miscellaneous	25,470	25,480
Total Oklahoma	405,060	414,799
North Louisiana	59,455	61,220
Arkansas—		
El Dorado	11,530	11,850
Smackover Light	12,755	15,980
Smackover Heavy	95,435	94,160
Other Arkansas Fields	10,890	10,930
Total Arkansas	130,610	132,920
North Central Texas	113,690	112,735
East Central Texas (Mexia, Currie, Corsicana, Powell)	217,225	228,525
Kansas	72,750	73,800
Total Mid-Continent Area	998,790	1,023,999
Gulf Coast	99,200	100,400
Eastern	111,075	111,225
Wyoming-Montana	168,220	160,315
California—		
Santa Fe Springs	325,000	330,000
Long Beach	240,000	235,000
Huntington Beach	90,000	90,000
Remainder State	212,000	208,000
Total California	867,000	863,000
Total United States	2,244,285	2,258,939

Decrease, 14,654 Barrels

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PRODUCING REFINING MARKETING

Published Weekly at 114-116 West Second Street, Tulsa, Oklahoma, by
THE PETROLEUM PUBLISHING CO.

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Arrangements have been made with the Western Union for a telegraph office and messenger service in The Oil and Gas Journal booth and with the Bell Telephone Co. for handling long distance and local calls from visitors to The Journal's section.

The Oil and Gas Journal extends a general welcome to its friends visiting the exposition to call at the booth and register their names and addresses so they can be located by and can locate other visitors.

In addition a cordial invitation is also extended to inspect the newly enlarged plant at the Oil and Gas Journal Building, 114-116 West Second Street, where all facilities will be offered for correspondence.

The Oil and Gas Journal will be glad to have its readers visiting Tulsa during the exposition week make this office their headquarters, assuring them of every courtesy and hospitality.

AMERICAN OIL MEN'S ASSOCIATION HOLDS CONVENTION AT CHICAGO

By J. B. Waldo

CHICAGO, Oct. 3.—In his address of welcome to the convention of the American Oil Men's Association here yesterday, Mayor William E. Dever, of Chicago, stated this was the third occasion since he took office that he had left his duties to be present on such an occasion, this time partly due to the importance of the industry and partly to the insistence of his friend, Sheldon Clark, for, said he, "Anyone who knows Sheldon Clark knows that it is best and easiest to do what he wants."

The members assembled promptly and before the first luncheon over 200 had registered. In the absence of President McKenzie, who was prevented by illness from being present, C. E. Smith, of the Rockford Oil & Refining Co., presided, and introduced as the first speaker Benjamin A. Bills, sales manager of the American Bond & Mortgage Co.

Address on Sales Tactics

The subject of Mr. Bills' address was "Sales Tactics in Modern Business." He spoke at some length on the aspect of getting business through an intimate knowledge of the thing to be sold which required the salesman to analyze the house, the object to be sold and the prospect, which he said was the best way in which to inspire enthusiasm. He said "canned" sales talks contained ptomaine poison, and pointed out how to secure assent through a legitimate use of the idea that assent was given by the prospect when he admitted the merit of the proposition and that it was imperative the prospect should not be given the idea that a rejection of it was possible.

He was followed by Mr. Smith, who acted as both the presiding officer and the principal speaker on the subject, "Purpose of the Convention and the Results to Be Accomplished." Mr. Smith spoke earnestly on the influence of organization on all the life of the individual and the community, in religion, education, politics and, lastly, in industrial affairs. He said the American Oil Men's Association was filling a place and had ideas that challenged any other organization. If any present did not agree with these ideas but inclined to those of any rival organization their place was with the other organization.

To Win Public Confidence

Mr. Smith spoke of the necessity for taking the public into their confidence and instanced other industries that had been as much under the ban of certain elements in the country as was the petroleum industry, which had by a frank statement of the facts completely turned the tide of public opinion in their favor. He remarked that he recently had an illustration of the real greatness of the American public in the case of the death of our late President, Warren G. Harding. It had been his fortune to witness the passing of the funeral train in a little town of perhaps 1,500 people near his home city of Rockford. Long before the train was due thousands literally lined the tracks for a long distance and when the train passed there was no ringing of bells, no blowing of whistles, but reverently the many there bared their heads and stood bowed in sympathy as the body of one of our best loved presidents was borne to his long rest. He reiterated his belief in the justness and love of fair play of the public once it knew where the right lay. The address was warmly applauded.

A closed meeting of the directors of the association followed the luncheon. The members then, for the most part, adjourned to the displays in the Elizabethan room where, contrary to the usual custom, everything was ready at the opening of the convention. The displays filled 20 booths and included many exhibits of great interest to oil men and in addition there was an overflow display in the writing room to the rear of the main display room which housed several exhibits.

An Open Discussion

The morning session today was devoted to an open discussion of subjects brought before the meeting and the appointment of committees to report later. The presiding officer was P. C. Crenshaw, of the Home Oil Co.

At the noon luncheon Guy Sweeney, of the Sweeney Gasoline & Oil Co., presided and at this session W. H. Gray, president of the National Association of Independent Oil Producers, spoke on the "Producers' Viewpoint," while Fred H. Wickett, of the Sapulpa Refining Co., gave the "The Refiners' Viewpoint." These addresses were the feature of the day's formal program. A. Guiberson, Jr., spoke on "The California Situation."

The evening was filled by a smoker and entertainment in the gold room

From the point of attendance, which exceeded 300 registered oil men, many from out of town and including many notable figures in the oil industry, the second convention of the American Oil Men's Association was most successful

The program for Thursday remains unchanged and consists of hearing the report of committees in the morning and the appointment of a permanent secretary with such closing business as properly will come before the meeting. In the evening the meeting will close with a banquet in the gold room with Sheldon Clark as toastmaster and as principal speakers, Hon. James A. Watson, of Indiana, on "National Issues," and L. R. Putnam on "Moulding Public Opinion."

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Published Weekly by
THE PETROLEUM PUBLISHING COMPANY
114-116 West Second Street
TULSA, OKLA.

Established as an International Publication in 1910 by Patrick C. Boyle

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TERMS OF SUBSCRIPTION
(By Mail, Postage Prepaid)

Single copies - - - - - - - - - - $ .15
Three months - - - - - - - - - - $2.00
Six months - - - - - - - - - - - $3.00
One year (in United States) - - - - - - - $6.00
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OIL INDUSTRY A TARGET

Special sessions of the Legislatures of five States have been called and it is significant that bills dealing with gasoline figure in the program.

The Arizona call specifically includes automobile and gasoline taxes among the subjects to be considered. In that State, owing to the Supreme Court removing the veto of the Governor, there is a question whether the gasoline tax is not now 4 cents.

The Governor of Arkansas has among his recommendations a proposal for highway, motor and gasoline taxes. A bill introduced would levy a tax of 4 cents on each gallon of gasoline sold and on each gallon of motor oil the sum of 10 cents!

In Alabama bills are pending to impose an excise tax on gasoline, to give counties authority to vote a 1-cent tax on gasoline, to regulate the standards of motor fuel, to levy a severance tax on natural resources, to regulate oil pipe lines and the sale of "crude oil and petroleum," to regulate gas pipe lines and the business of furnishing natural gas, to levy a 3-cent gasoline tax, and to collect a license or privilege tax from each person severing any natural product.

Georgia, Iowa and Michigan are other States having special sessions and there is little doubt gasoline will figure in the proceedings.

The example of the Governor of Arkansas, who would tax not only gasoline but motor oil, and that 10 cents, is a startling example of how far this craze for taxing petroleum products may go. The 4-cent tax on gasoline and this dime on oil may, however, be so extreme that it may arouse motor users to a realization of their peril from indiscriminate taxation.

Alabama's zeal in restricting and hampering oil and gas operations in that State, as well as to harass motorists and motor traffic, is a curious manifestation of legislative capacity. They seem determined to handicap progress but are not averse to profiting by it if it should be forced upon them.

These legislative programs are of special interest on the eve of the assembling of the National Congress, where it is expected the oil industry will also be made a target.

TELL IT TO THE CONSUMERS

It is a curious thing, when you come to think about it. that an industry which comes into personal contact with 13,000,000 customers, or about one for every two families in the United States, should be so little understood by the public as the oil business.

On August 1 there were approximately 13,000,000 automobile owners in this country. Practically each of these cars and trucks visits a filling station at least once a week, or their users have direct contact with gasoline distributors. **Has the oil industry ever thought of the opportunity thus offered of getting its case before the people?**

Here it is, struggling with an unparalleled condition and facing the probability that when Congress reassembles it will be made the target for all sorts of regulative restrictions and ruinous measures devised by demagogs and political opportunists, misrepresented through misunderstanding or lack of understanding in the daily press, and denounced without hearing by an uninformed popular sentiment, and yet it has within its grasp the very finest opening for placing its case before the people and fails to recognize the opportunity.

Elsewhere in this issue of The Oil and Gas Journal appear two articles to be commended to the attention and thought of all oil men. One is from our Washington correspondent, Charles W. Kern, who stresses the imperative need for the oil industry to have a publicity bureau at Washington **to put the facts about the industry before Congress and to counteract and correct, on the spot and at the moment, the never-ceasing stream of hostile propaganda against the oil business.** The need at the National Capital is for experienced oil men who can state its case with authority and contradict with instant proof the allegations made against it; for trained writers who can furnish these statements to the news associations and newspapers in readily understood language, simply and convincingly.

The other article is the report of the address delivered by W. H. Gray, president of the National Association of Independent Oil Producers, before the American Oil Men's Association at Chicago, and dealing with this very **necessity of informing the consumers about the difficulties of the oil business upon which the country depends for the finding and furnishing of the fuel needed by our motorized civilization.**

The public has neither time nor inclination to wander through tedious dissertations upon the high moral principles or aims of this or that company or unsupported general assertions of humanitarian purposes and services. What is needed is a concise argument setting forth the actualities about the production of oil, the immense loss of effort and money through dry holes, the narrow margin of profit in the production, refining and distribution of petroleum products, the dependence of the country, as stated by Mr. Bedford at the Drake Day celebration, upon the 250,000 small wells out of the total of 280,000, and the danger that these wells may have to be abandoned and lost forever through a mistaken clamor for cheaper gasoline and crude.

There is no mystery about these things. They can be put so plainly anyone can understand them and realize that **lacking these small wells the motor using public would soon find itself without gasoline at any price.**

The American people are fair when they know the facts. They are unfair only when they hear but one side. They have heard nothing but political progaganda directed against the oil industry by demagogs who had to have an issue to befog the people. Why not seize the opportunity that lies ready to the hand of the industry to get its case before the public that does business with it?

A statement of **the oil industry's side of the matter,** carefully studied out and plainly set forth, **could be put into the hands of every one of the 13,000,000 motor owners at the filling stations throughout the country** within a couple of months—before Congress convenes, and it is safe to say it would work a wonderful change in popular sentiment.

While the consumer is waiting for the station man to "fill 'er up" or having oil put in, or any of the other services supplied at the average filling station (services that the public too often forgets when denouncing gasoline prices) he can hardly fail to occupy his time looking over such a statement courteously handed to him. He is **certainly interested in knowing anything he can learn about the product he is buying. Why not offer him the information on the spot?**

The cost of such a distribution would be insignificant compared to its value, merely printing and paper. The distributing agencies are already available. It would not cost a fraction of newspaper publicity which could be used later. **The consumers at the filling stations are the logical starting point.** Convince them and there will be a speedy end to the campaign of misrepresentation and antagonism among the politicians who have been deluding motorists and the general public.

Other industries rely on publicity methods to get their case before the country. The railroads, the coal industry, the packing industry, every industry that has been subjected to political "hijacking," has taken means to place its side before the country, all except the oil industry. Yet oil men have within their reach at the filling stations the very best opportunity that could be asked to tell their customers the truth about the business and have them see things as they are, not as the politicians tell them. **Why not use it?**

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be made a target.

have them see things as they are, not as the politicians tell them. **Why not use it?**

Petroleum Securities Show Steadiness

Protracted Halt in General Decline of Oil Stock Prices Noted During the Months of August and September.

By N. O. Fanning
Room 525 No. 30 Church St., New York

NEW YORK, Oct. 1.—Oil securities showed steadiness during the past week. The issues which had been heavily sold the week before scored advances of a point or more from the new lows which had been established, including Cosden & Co. common, Sinclair Consolidated common, Marland Oil and Producers & Refiners. On the other hand many of the Standard Oil stocks displayed a strong tone, advancing to new highs on the current movement.

Vacuum Oil stood out as the strongest feature of the Standard group, selling up to 49½ and holding much of the gain. At the close of July this stock rapidly fell off to 40, the low point for the year. The present price of the stock indicates that this issue, and probably many other oil stocks, were heavily oversold at that time.

Among the petroleum stocks listed on the New York Stock Exchange, Pacific Oil was the firm feature. It reached a high of 36⅜ on the recovery, against a low of 31½. During the last few days the stock has been unusually steady in the face of irregularity in the stock market as a whole. Standard Oil of California has a substantial interest in Pacific Oil. Its stock also showed firmness, holding above 51, and reaching a high of 52⅛ on the rebound.

Sentiment Improving

Withdrawing attention from particular issues, indications are that sentiment regarding the oil industry is rapidly improving. The reduction in the price of Mid-Continent crude oil by the leading purchasing companies, together with the fact that the passing of several oil company dividends, which had unsettled the market, is past, indicates that the groundwork has been definitely laid for an upturn. One factor which may curb any wild enthusiasm about oil securities as a whole is the possibilities of a cut in the Sinclair Consolidated common dividend. Sinclair stock was one of the leaders in the last heavy selling movement in oil stocks, reaching a new low for all time of 16, but recovered to 18. The size of this company, together with the wide public distribution of its securities, makes any uncertainty regarding dividend payments have a widespread effect on the situation as regards public buying of stocks of other oil companies, regardless of the merits of the case. This situation is believed to be the one factor in the way of more healthy buying of oil stocks. However, it must be admitted that irrespective of the dividend action of the Sinclair company, it will only be a short time before oil securities as a whole begin to reflect the better feeling which prevails regarding the oil situation.

Cut in Eureka Rate

The Eureka Pipe Line Co., a Standard Oil eastern carrier, declared a quarterly dividend of $2 per share, payable November 1 to stockholders of record October 15. This compares with $3 quarterly paid during the three previous quarters, and is a reduction in the rate from $12 annually to $8 annually.

The Shaffer Oil & Refining Co. has passed the regular dividend 1¾ per cent on the preferred stock for the quarter ended September 30.

The Associated Oil Co. reports a surplus of $2,253,072 during the first six months of 1923, after payment of interest, taxes and depreciation, equivalent to $1.41 per share on the common stock of $25 par value. This compares with $2,704,449, or $6.80 per share on the $100 par stock outstanding at the close of June, 1922. The Associated Oil Co. is controlled by the Pacific Oil Co. Through its subsidiary, the Amalgamated Oil Co., it has a large production in the fields of southern California.

September Review

The month of September was one of marked irregularity in the course of oil securities, and was featured by the making of a new low for The Oil and Gas Journal's average price of 20 representative oil stocks listed on the New York Stock Exchange. This new low was 41.43 registered on September 18. The high mark for the average for all time was 63.84 on October 17, 1922, almost a year ago. The total decline in 11 months amounts to 22.41 points, or 35 per cent. The high point reached this year was 62.17, on March 6, and the decline since that date amounts to 20.74 points, or 32 per cent. These figures indicate that oil stocks have been oversold.

It is significant that the average as of September 25, of 42.48 is a drop of only 1.70 compared with the end of August, and that August showed a gain of .31 of a point over the close of July. In other words, during the two months of August and September there was a net decline of only 1.39 points in the average, while there was a drop of 8.20 points during June and 1.61 points during July. In other words, it appears that there has been a protracted halt in the general decline of oil stock prices.

Just as September appears from this to mark the probable turning point in the market for oil securities, so it may be that October will mark the beginning of a real upward movement. However, this is by no means assured. It is possible that oil stocks, as a whole, will hold around present levels for months. An improvement in conditions in the oil industry should bring recovery, however.

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

No.	Stock—	Par	Dividend Rate	Closing Quotations Oct. 2	Sept. 25	Range High	1923 Low
1.	Associated Oil	100	6	100½	*98	134	98¼
2.	Atlantic Refining, common	100	4	*103	*100	160	98¾
3.	Barnsdall "A"	25	..	*13	13	35	9⅞
4.	Caddo Central Oil	..	..	*1⅛	*1⅛	9¼	1½
5.	California Petroleum, common	25	7	19	18⅝	29⅛	17⅛
6.	Cosden & Co., common	..	†4	26⅝	24⅝	62¼	22¾
7.	General American Tank	..	†3	41	*42	71⅞	40
8.	General Asphalt	100	..	29	27¼	54	23
9.	Houston Oil	100	..	52	48¼	78	40¾
10.	Independent Oil & Gas	10	..	*3	4	11¼	3¾
11.	Indiahoma Refining	25	..	2⅛	*2⅛	9	1¼
12.	Indian Refining	10	..	*5	*6	8½	5
13.	Invincible Oil	50	..	9⅛	9¼	19¼	8
14.	Marland Oil	..	†4	24⅝	22⅞	59⅝	20¼
15.	Mexican Seaboard	..	..	9⅝	9	19⅝	5⅝
16.	Middle States Oil	10	..	5	5	12¼	4⅜
17.	Pacific Oil	..	†3	37⅛	35	48⅞	31½
18.	Pan-American, common	50	16	56⅛	57½	93½	53
19.	Panhandle Prod. & Ref.	..	..	*1	*1¼	6¼	1⅜
20.	Phillips Petroleum	..	†3	24⅝	23¼	69⅝	19⅜
21.	Pierce Oil, common	25	..	1⅝	2	6	1½
22.	Producers & Refiners	50	4	24½	23½	58¼	20¼
23.	Pure Oil Co., common	25	6	17¼	17¼	32	16¼
24.	Royal Dutch, N. Y., sh.	13.40	2.62	43⅝	44⅜	55⅛	40½
25.	Shell Transport	10	x92½	*33	*32	41¼	29½
26.	Shell Union, common	..	†1	15⅝	15⅝	19¼	12⅝
27.	Simms Pet.	10	..	7½	7¼	16⅝	6½
28.	Sinclair Consolidated, common	..	†2	18½	17⅝	39⅝	16
29.	Skelly Oil	25	..	16¼	14⅞	35	12½
30.	Standard of California	25	8	52½	51	64½	47⅛
31.	Standard Oil of N. J.	25	4	33½	33¼	44½	30⅜
32.	Standard of New Jersey, preferred	100	7	116¼	*115½	118	114⅜
33.	Superior Oil	..	..	2	2⅛	6⅜	2
34.	The Texas Co.	25	12	41¼	40⅝	52⅞	39¼
35.	Texas & Pacific Coal & Oil	10	..	8	8	24⅝	7
36.	Tide Water Oil	100	..	101	99	144	94
37.	Transcontinental	..	..	3⅝	3⅝	14½	3⅛
38.	Union Tank, preferred	100	7	107	107⅛	114	106
39.	White Eagle Oil & Ref.	..	2¼	32	32	30⅝	20¼
40.	White Oil	..	..	1⅛	1¼	5⅞	1¼
	Standard Oil Stocks						
41.	Anglo-American Oil	5	10	14⅝	14	19⅝	13½
42.	Borne Scrymser	100	17	135	*130	153	110
43.	Buckeye Pipe Line	50	14	80	79½	94	77
44.	Chesebrough Manufacturing, Com.	100	14	*224	230	238	205
45.	Continental Oil	100	8	*34⅝	*35	50	32½
46.	Crescent Pipe Line	50	6	*17	*16½	25	16
47.	Cumberland Pipe Line	100	12	*106	*106	116	80
48.	Eureka Pipe Line	100	8	98	*105	117½	96
49.	Galena-Signal, common	100	4	58½	*60	78	55
50.	Humble Oil & Ref.	25	8	*28½	*29	41	28¼
51.	Illinois Pipe Line	100	14	152	*152	171	152
52.	Imperial Oil, Ltd.	25	16	*98	97½	123	92
53.	Indiana Pipe Line	50	16	*88	87	103	83½
54.	Intl. Pet., Ltd.	..	60	15½	14⅝	24⅝	13¼
55.	Magnolia Pet.	100	5	129½	129½	166	123
56.	National Transit	12.50	16	*34	*23	29	22⅝
57.	New York Transit	100	12	*93	95	138	92
58.	Northern Pipe Line	100	25	107	*101	111	96
59.	Ohio Oil Co.	25	12	55½	52⅝	85⅝	48¾
60.	Penn-Mex Fuel	25	..	*18½	*24	25½	10½
61.	Prairie Oil & Gas	100	8	167½	157	272	152
62.	Prairie Pipe Line	100	8	98½	98½	117	93
63.	Solar Refining Co.	100	15	*165	*165	212	161
64.	Southern Pipe Line	100	16	*93½	*94	116	93
65.	South Penn Oil	100	..	*120	*115	196	100
66.	South West Pa. Line	100	8	*81½	*81	89	66
67.	Standard of Indiana	25	10	54½	53⅝	69⅞	49¼
68.	Standard of Kansas	25	8	40	*37	56¼	36½
69.	Standard of Kentucky	25	16	90	88	109½	76
70.	Standard of Nebraska	100	20	*280	*200	280	186
71.	Standard Oil of N. Y.	25	16.8	42	39	49⅝	35½
72.	Standard of Ohio, common	100	10	*275	*276	317	270
73.	Swan & Finch	100	..	*23	*25	38	21½
74.	Vacuum Oil	25	8	49½	47⅝	55¼	40
75.	Washington Oil	10	..	*21	*20	28	23
	Miscellaneous Stocks						
76.	Cities Service, banker's shares	..	‡21	*13	*13	18⅜	12⅜
77.	Gulf Oil Corporation of Pa.	25	6	50½	49½	68¼	45⅝
78.	Union Oil of Cal.	100	8.2	*100	*95	115	90

*Bid, no sales. †In dollars. ‡6 per cent in cash and 15 per cent stock dividend declared; now being paid in scrip. xCents per share.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange weekly was as follows:

Oct. 2	43.53	Aug. 21	44.34	July 10	45.90
Sept. 25	42.48	Aug. 14	43.39	July 3	45.48
Sept. 18	41.43	Aug. 7	43.87	June 26	47.52
Sept. 11	44.78	July 31	42.58	June 19	48.26
Sept. 4	44.06	July 24	46.32	June 12	51.75
Aug. 28	44.16	July 17	46.52	June 5	53.68

Motion Picture on Oil Industry Will Feature Exposition

With the various oil companies planning to permit their employes to have time off from work to view the motion picture, "The World Struggle for Oil," which The Oil and Gas Journal secured for presentation at the Majestic Theater in Tulsa each morning at 10 o'clock during next week, it is apparent the showing of this film on the development of the petroleum industry will be one of the big features of exposition week. Thousands of requests for tickets for the picture have been received by this publication and it is expected the theater will be well filled each morning during the week. These tickets are free for the asking and may be obtained at the booth of The Oil and Gas Journal in the exposition grounds or at the offices of the publication, 114-116 West Second Street.

The picture is regarded as the best of its kind ever filmed. It was taken through the cooperation of the United States Bureau of Mines and the Sinclair Consolidated Oil Corp., under the direction of H. E. Butler, and shows in a most interesting way the development of the petroleum industry from earliest history. Starting with Noah putting pitch on the seams of the Ark, scenes are shown of the various uses of petroleum through Medieval times when warring nations used it in their battles, through the period of early Indian history when the aborigines soaked their blankets in petroleum for use in medicinal purposes, down through the exciting times immediately following the drilling of the Drake well and on up to the present high state of development in the producing, refining, transporting and marketing branches of the industry. All scenes are historically correct, those taking part in the picture being chosen with as great care as the great motion picture studios select their characters, while costumes and scenery are as nearly correct as it was possible to make them.

Mr. Butler has arranged the picture in such a manner it grips the attention from the start and holds it throughout the hour and 15 minutes required in showing the film. No phase of the petroleum industry has been overlooked and oil men who have seen the picture back East declare they learned more from viewing the picture than they could have learned in 10 years of actual field work in the business.

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Statistics of Crude Petroleum for August, 1923

During August the production of crude petroleum in the United States attained the new high record of 2,119,871 barrels a day, according to the Geological Survey, but it is noteworthy, after many months of rapidly increasing production, that the rate of increase materially slackened. Production in California continued to gain, the daily average for the month being 852,903 barrels. A considerable increase is also recorded for Texas, and smaller gains in other States, but these in large part were counter-balanced by greatly decreased production in Oklahoma and Kansas. The net change in production for the entire country for the month of August was an increase of only slightly more than 15,000 barrels a day, being the smallest increased production that has been recorded since September, 1922. Daily average imports during August were 244,516 barrels and daily average exports were 49,677 barrels.

PRODUCTION BY STATES

(Barrels of 42 U. S. Gallons)

	July, 1923		August, 1923		Jan.-Aug.,	Jan.-Aug.,
	Total	Daily Av.	Total	Daily Av.	1923	1922
Arkansas	2,859,000	92,226	3,113,000	100,419	22,780,000	8,362,000
California	25,262,000	814,906	26,440 000	852,903	169,092.000	83,855,000
Colorado	4,600	148	5,300	171	46,100	64,700
Illinois	745,000	24,032	747,000	24,097	5,902,000	6 435,000
Indiana:						
Southwestern	68,000	2,194	70,000	2,258	544,000	565,000
Northeastern	*22,000	709	26,000	839	160,000	163 000
Total Indiana	*90,000	2,903	96,000	3,097	704,000	728,000
Kansas	2,303,000	74,290	2,047,000	66,032	19,459,000	21,532,000
Kentucky	612 700	19,765	737,000	23,775	5,449,500	6,064,600
Louisiana:						
Gulf Coast	191,000	6,161	191,000	6,161	1,511,000	1,099,000
Rest of State	1,821 000	58,742	1,887,000	60,871	15,510,000	23,304,000
Total Louisiana	2,012,000	64,903	2,078,000	67,032	17,021,000	24,403,000
Montana	251,000	8,097	260,000	8,387	1,797,000	1,443,000
New York	111 000	3,580	105,000	3,387	779,000	656,000
Ohio:						
Cent. and Eastern	420,000	13,548	420,000	13,548	3,278,000	3,151,000
Northwestern	*189,000	6,097	188,500	6,065	1,449,000	1,363,000
Total Ohio	*609,000	19,645	608,000	19 613	4,727,000	4,514,000
Oklahoma:						
Osage County	*3,217,000	103,774	3,105,000	100,194	26,679,000	26,053,000
Rest of State	*11,458,000	369,613	9,824,000	316,903	85 183,000	72,005,000
Total Okla	14,675,000	473,387	12,930,000	417,097	111,862,000	98,058,000
Pennsylvania	616,000	19,871	613,000	19 774	4,944,000	4,909,000
Tennessee	300	10	1,000	32	6,500	6,400
Texas:						
Gulf Coast	2,555,000	82,419	2,605,000	84,032	20,285,000	23,315,000
Rest of State	8,107,000	261,516	8 849,000	285,452	52,971,000	59,320,000
Total Texas	10,662,000	343,935	11,454,000	369,484	73,256,000	82,635,000
West Virginia	542,000	17,484	561,000	18,097	4,334,000	4 776,000
Wyoming:						
Salt Creek	3,150,000	101,612	3,325,000	107,258	21.382.900	11,270,600
Rest of State	742,400	23,948	595,700	19 216	5,020,000	4,957,300
Total Wyoming	3,892,400	125,560	3,920,700	126,474	26,402,000	16,227,300
Grand total	65,247,000	2,104,742	65,716,000	2 119,871	468,561,000	364,639,000

*Revised.

PRODUCTION OF PETROLEUM BY FIELDS

(Barrels)

	July, 1923		August, 1923		Jan.-Aug.,	Jan.-Aug.,
	Total	Daily Av.	Total	Daily Av.	1923	1922
Appalachian	2,302,000	74,258	2,437,000	78,613	18,790,000	19,563 000
Lima-Indiana	211,000	6,806	214,000	6,904	1,609,000	1,526,000
Ill. and S. W. Ind.	813,000	26,226	817 000	26,355	6,446,000	6,970,000
Mid-Continent	29,765,000	960,161	28,826,000	929,871	222,582,000	210,576,000
Gulf Coast	2,746,000	88,580	2,796,000	90,193	21,796 000	24,414,000
Rocky Mountain	4,148,000	133,805	4,186,000	135,032	28,246,000	17,735,000
California	25,262,000	814 906	26,440,000	852,903	169,092,000	83,855,000
Total	65,247,000	2,104,742	65,716,000	2,119,871	468,561,000	364,639,000

STOCKS

Stocks of crude petroleum are classified as follows:

1. Producers' stocks: Petroleum held on the producing properties (lease or "field" storage). Producers' stocks are reported to the Geological Survey annually and are included in the Survey's final statistics.

2. Pipe line and tank farm stocks: Petroleum that has been transported from the producing properties but not delivered to refineries or to other consumers and is held on tank farms, in tanks along pipe lines, and in the lines. Pipe line and tank farm stocks constitute by far the greater part of the petroleum held in storage in the United States. For the States east of California such stocks are reported monthly to the Geological Survey as gross stocks, including the total contents of tanks and pipe lines, and as net stocks, which are gross stocks minus sediment and water. The stocks reported for California are compiled by the Pacific Coast office of the American Petroleum Institute and include producers', pipe line, and tank farm stocks (but not refinery stocks) of crude oil, residuum and tops.

3. Refinery stocks and stocks held at other points of consumption: Petroleum that has been delivered to refineries or to other consumers. Stocks of crude petroleum held at refineries are compiled by the Bureau of Mines.

PIPE LINE AND TANK FARM STOCKS OF CRUDE PETROLEUM ON LAST DAY OF MONTH

(Barrels)

Source by fields—	July 31, '23	Aug. 31, '23	Aug. 31, '22
Domestic petroleum:			
East of California: Gross and net pipe line and tank farm stocks:			
Appalachian:			
N. Y., Pa., W. Va., Eastern and Central Ohio:			
Gross	6,426,000	6 472,000	5,965,000
Net	6,165,000	6,262,000	5,704,000
Kentucky:			
Gross	3,135,000	3,170,000	2,958,000
Net	3,005,000	3,041,000	2,856,000
Lima-Indiana:			
Gross	1,065,000	1,082,000	1,118,000
Net	816,000	845,000	859,000
Illinois-S. W. Indiana:			
Gross	11,328,000	11,532,000	10,436,000
Net	10,867,000	11,072,000	9,939,000
Mid-Continent:			
Oklahoma, Kansas, Cent. and N. Texas:			
Gross	164,685,000	*164,650,000	147,054,000
Net	153,311,000	*153,577,000	135,045,000
North Louisiana and Arkansas:			
Gross	28,267,000	*28,159 000	16,440,000
Net	27,339,000	*27,227,000	15,820,000
Gulf Coast:			
Gross	23,930,000	24,314,000	25,339,000
Net	23,553,000	23,942,000	23,597,000
Rocky Mountain:			
Gross	8,795,000	9,910,000	1,886,000
Net	8,794,000	9,906,000	1,861,000
Total pipe line and tank farm stocks east of California:			
Gross	247,631,000	*249,289 000	211,196,000
Net	233,850,000	*235,872,000	195,681,000
California (as stated above)	58,401,000	61,170,000	45,078,000
Imported crude petroleum held in the United States by importers elsewhere than at refineries:			
At Atlantic Coast stations	176,000	72,000	†
At Gulf Coast stations	627,000	819,000	†
Total	803.000	891,000	
Total domestic net pipe line and tank farm stocks east of California; producers', pipe line and tank farm stocks in California plus stocks of imported crude petroleum held in the United States by importers elsewhere than at refineries	293,054,000	*297,933,000	†

*4,029,000 barrels have been deducted from stocks formerly classed as pipe line and tank farm stocks on account of reclassification by a company operating in the Mid-Continent Field. †Not available.

DAYS' SUPPLY OF PIPE LINE AND TANK FARM STOCKS

(Based on monthly rate of consumption (deliveries to consumers) of crude petroleum)

June, 1923, 156; July, 1923, 148; August, 1923, 147.

IMPORTS AND EXPORTS OF CRUDE PETROLEUM*

(Barrels)

(Compiled from records of the Bureau of Foreign and Domestic Commerce)

	July, 1923		August, 1923		Jan.-Aug.,	Jan.-Aug.,
	Total	Daily Av.	Total	Daily Av.	1923	1922
Imports:						
From Mexico	6,751,000	217,774	7,341,000	236,806	52 359,000	97,372,000
From other coun.	144,000	4,645	239,000	7,710	2,212,000	447,000
Total	6,895,000	222,419	7,580,000	244,516	54,571,000	97,819,000
Exports:						
Domestic crude oil:						
To Canada	583,000	18,807	734,000	23,677	5,550,000	4,950,000
Other countries	935,000	30,161	777,000	25,065	5,241 000	1,261,000
Foreign crude oil	29,000	935	†29,000	†935	192,000	73,000
Total	1,547,000	49,903	1,540,000	49,677	10,983,000	6,284,000
Excess of imports over exports	5,348,000	172,516	6,040,000	194,839	43,588,000	91,535,000

*The Bureau of Foreign and Domestic Commerce has adopted a new classification which differentiates crude petroleum and topped oil; formerly, data for topped oil were included with those for crude oil and difficulty is still encountered in completely separating the two. †August data not available, July figures used.

CLASSIFICATION OF IMPORTS OF MEXICAN CRUDE PETROLEUM (as reported to the Geological Survey)

Percentage of Mexican imports, crude oil, lighter than 16°, July, 1923, 18; August, 1923, 17; Jan.-Aug., 1923, 32; Jan.-Aug., 1922, 73; 16° and heavier, July, 1923, 82; August, 1923, 83; Jan.-Aug., 1923, 68; Jan.-Aug., 1922, 27.

INDICATED CONSUMPTION (DELIVERIES TO CONSUMERS) OF DOMESTIC AND IMPORTED CRUDE PETROLEUM

(Barrels)

	July, 1923		August, 1923		Jan.-Aug.,	Jan.-Aug.,
	Total	Daily Av.	Total	Daily Av.	1923	1922
Domestic petroleum, by fields of origin:						
Appalachian	2,313,000	74,613	2,304,000	74,323	18,355,000	17,862,000
Lima-Indiana	201,000	6,484	185,000	5,968	1,449,000	1,673 000
Ill. and S.W. Ind.	660,000	21,290	612,000	19,742	5,514,000	4,590,000
Mid-Continent	24,084,000	776,903	24,643,000	794 935	190,322,000	160,135,000
Gulf Coast	2,861,000	92,290	2,407,000	77,645	22,635,000	18,486,000
Rocky Mountain	3,191,000	102,936	3,074 000	99,161	23,498,000	17,229,000
California	22,600,000	729,032	23,671,000	763,581	157,297,000	73,799,000
Consump. and exp.	55,910,000	1,803,548	56,896 000	1,835,355	419,070,000	293,774,000
Exp. dom crude oil	1,518,000	48,967	1,511,000	48,742	10,983,000	6,211,000
Consumption	54,392,000	1,754,581	55 385,000	1,786,613	408,087,000	287,563,000
Imported petroleum	*6,800,000	219,435	7,463,000	240,742	55,498,000	89,338,000
Consump. of dom. and imported pet.	*61,192,000	1,974,016	62,848,000	2,027,355	463,585,000	376,901,000

*Revised.

NUMBER OF PRODUCING OIL WELLS COMPLETED DURING MONTH*

June, 1923, 1,830; July, 1923, 1,733; August, 1923, 1,465; Jan.-Aug., 1923, 11,970; Jan.-Aug., 1922, 11,731.

*For States east of California, from The Oil and Gas Journal; for California, from the American Petroleum Institute.

SHIPMENTS OF CALIFORNIA OIL THROUGH PANAMA CANAL TO EASTERN PORTS IN UNITED STATES

(From the Panama Canal Record)

(Compiled from declaration by masters of vessels reported in tons of 2,240 pounds)

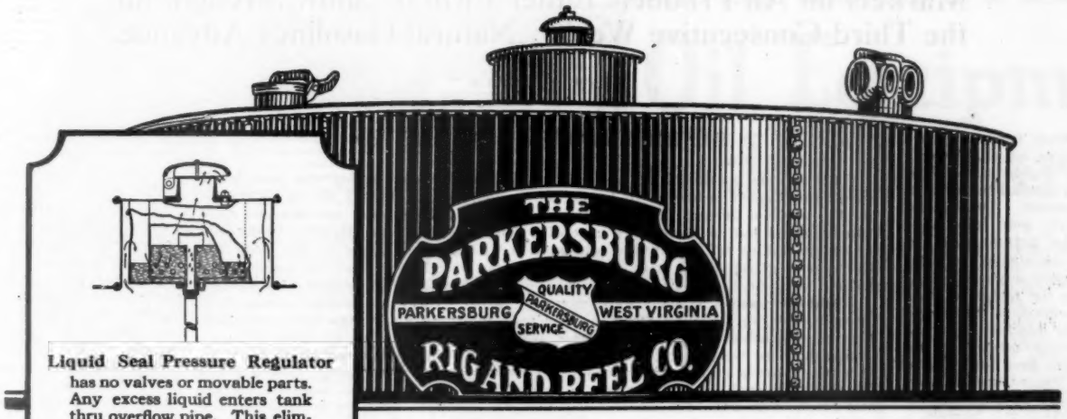
Crude oil, long tons, July, 1923, 756,704; August, 1923, 756,801; Jan.-Aug., 1923, 4,282,325; crude oil, barrels (approximate), July, 1923, 5,524,000; August, 1923, 5,525,000; Jan.-Aug., 1923, 31,261,000.

Refined products, long tons, July, 1923, 43,559; August, 1923, 24,506; Jan.-Aug., 1923, 348,396; Jan.-Aug., 1922, 57,723.

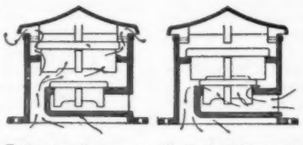
MONTHLY SUMMARY FOR JANUARY—AUGUST, 1923, SUBJECT TO REVISION

	Domestic production of petroleum (petroleum transported from producing properties)		Imports of crude petroleum		Exports of crude petroleum		*Stocks		Estimated consumption of domestic and imported petroleum (deliveries to consumers)		
	Total (thousands of bbls.)	Daily average (bbls.)	Total (thousands of bbls.)	Daily average (bbls.)	Total (thousands of bbls.)	Daily average (bbls.)	Held on last day of month (thousands of bbls.)	Number of days' supply on daily rate of consumption	Total (thousands of bbls.)	Daily average (bbls.)	No. of producing oil wells completed during month
1923—											
January	51,467	1,660,226	7,307	235,710	763	24,613	252,961	134	58 448	1,885,419	1,208
February	48,413	1,729,036	6,199	221,393	666	23,786	255,385	139	51,522	1,840,071	1,094
March	56,132	1 810,710	8,058	259,935	1,028	33,161	258,738	134	59,809	1,929,323	1,248
April	58,133	1,937,767	6,617	220,567	1,511	50,367	264,627	138	57,350	1,911,667	1,521
May	61,963	1,998,774	5,218	190,903	1,330	42,903	273,167	146	58,020	1,871,613	1,871
June	61,491	2,049,700	5,997	199,900	2,598	86,600	283,651	156	54,396	1,813,200	1,830
July	65,347	2,104,742	6,895	222,419	1,547	49.903	293,054	148	61,192	1,973,935	1,733
August	65,716	2,119,871	7,580	244.516	1,540	49,677	297,933	147	62,848	2,027,355	1,465

*Domestic net pipe line and tank farm stocks east of California; producers' pipe line and tank farm stocks in California plus stocks of imported crude petroleum held in the United States by importers elsewhere than at refineries.

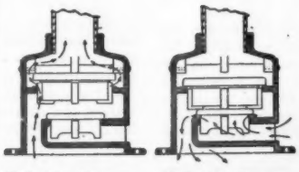


Liquid Seal Pressure Regulator
has no valves or movable parts. Any excess liquid enters tank thru overflow pipe. This eliminates danger of possible high pressure.



Releasing Pressure *Relieving Vacuum*

Mechanical Pressure Regulator
has aluminum valves of flat poppet type. No cams, levers, springs or other complicated parts.



Releasing Pressure *Relieving Vacuum*

Mechanical Pressure Regulator
with provisions for carrying excess gas away from the tank to avoid fire hazard. Designed for tanks where Gas is taken off for fuel—releases at 9 ounces. Can also be furnished for releasing at pressure lower than 9 ounces.

PARKERSBURG "Vapor Tight" Equipment can be applied to any steel tank—but the greatest economies are evidenced when this equipment is used with Parkersburg Bolted Steel Tanks.

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Henryetta
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*District Offices

Group 3 Prices Practically Unchanged

Markets on All Products Either Firm or Show Strength for the Third Consecutive Week. Natural Gasolines Advance.

By C. O. Willson

The Group 3 refined market opened for October with prices on all products either the same or higher than those which have generally prevailed since the first week in September. During the past week no products were lowered in price in Group 3 and natural gasolines which have shown consistent strength since the first of August advanced ¼ to ½ cent. Ever since the middle of September, when the refined market began to have a better tone due largely to the firmness of the gasoline market, it has been conceded that the first few days of October would be in the nature of a test which would determine whether the improved market situation was merely a temporary flash or really constituted a turn from an adverse period of several months.

At this writing there was nothing to indicate that there would be a downward break in any product, with the possible exception of fuel oil, and many of the trade, after observing market developments the first two days of the new month expressed confidence that a firm or strong market was assured at least for the balance of the month.

No Noticeable Change

There was no noticeable change in the New Navy and 56-58, 450 grades of gasoline over last week, the two products around which centers the greatest interest in Group 3 and also the most uncertainty. The major marketing organizations are not buying these grades of gasoline for domestic shipment in as large quantities as they had been up to a month ago. This is not an unusual development when a weak market begins to show firmness or strength. If the improvement is not based on sound conditions, this withdrawal on the part of the marketers is invariably followed by a break in markets in which the products affected slump to new low levels.

There are few yet willing to make an unqualified prediction that gasoline prices in Group 3 and the entire Mid-Continent area reached bottom last month. But the fact that the market has successfully withstood the attacks of the buyers who, in the face of constantly lowering prices for several months, are naturally unable to understand and appreciate a turn for the better, is evidence that the market improvement was based on fundamental and not artificial conditions.

Buying Under Outside

Some buyers state that they are buying their gasoline supplies under Group 3 prices from refining centers outside the Mid-Continent area. There is indisputable evidence that such is the case, in a few instances at least. But it is equally as true that the refiners of this group and other sections of the Mid-Continent are not accumulating gasoline stocks as they did in the spring and summer months whenever they attempted to keep their prices from going lower and certain large buyers withdrew from the market. As was pointed out in these columns last week, gasoline stocks have been reduced to the point where they are approximately the same as in other years and they are moving their current production from week to week. Occasionally, a refiner apparently accumulates a comparatively small amount of "distress" gasoline but these plants during the past two or three weeks have been speedily relieved by buyers when they offer the gasoline ¼ cent under the prevailing prices. At the present time there are several buyers, both for direct purchase and resale, who would buy a considerable quantity of New Navy and 56-58, 450 at ¼ cent under the prevailing prices. Some of this prospective business comes from marketers who sold short and are endeavoring to cover without losses.

Higher Gravity Scarcer

During the past few days there has been a noticeable scarcity of the higher gravity gasolines. Buyers for domestic shipment report that they find comparatively little of the 64-66, 375 and 390 grades available for spot shipment. Recent export purchases are largely responsible for this situation. These purchases in September were not as large from Group 3 as from North Texas and other sections of the Mid-Continent but several plants have not yet caught up on September sales. In order to obtain the 64-66, 375 grade, some of the export buyers have also taken a limited amount of New Navy and these purchases have also aided the market for the latter market. The apparent scarcity of the high gravities has not yet been reflected in general price advances. Such a development is to be expected, however, in the event the present situation in regard to supply continues for a few days.

Many in touch with the export situation anticipate considerable buying of gasoline and kerosene from Mid-Continent refiners during the remainder of the fall and winter months.

Heavy Exports Expected

The purchases of the past six weeks, after a period of several months in which there was practically no buying, is said by the more optimistic to presage a period of heavy buying in which the Mid-Continent will share. It is generally agreed by those in touch with the export situation that stocks in the hands of foreign buyers are comparatively low. Having become accustomed during the past several months to constantly lower prices, and being somewhat bewildered as to what is happening to the American oil industry, it is said that these foreign buyers have been buying "from hand to mouth." General business conditions are said to be favorable for a further increase in consumption in practically all refined products. Once the buyers are satisfied that prices will not go lower it is presumed that they will fill their tanks and make contracts which will force some heavy buying on the part of exporters over the winter months. Granted that this increased buying develops it is problematical just what part of it will come to the Mid-Continent refiner but the recent buying brings the hope that he will recover part of what he lost during the spring and summer months.

There has been some improvement in the demand for the 68-70, 350-365 grade of gasoline. This is said to be due to the strength shown in natural gasolines. Based on present prices, some refiners state that the high gravity gasoline is preferable in securing the desired specifications for motor gasolines.

Fuel and Gas Oils

There were no changes in fuel oil prices during the past week. Many market observers are frankly mystified because of this firmness. Prices are 5 cents lower in North Texas, and in some other sections there has been indications of weakness during the past few days. But buyers in Group 3, who endeavor to buy 24-26 in sellers' cars under 82½ are with rare exceptions unsuccessful.

Developments in other markets are being closely watched. The Standard Oil Co. of New Jersey, the first of the week, reduced bunker oil 15 cents a barrel and gas oil on the East Coast has also been reduced ½ cent. With a large production of California crude assured for the winter with its large fuel oil content many in close touch with market conditions do not believe it will be possible to maintain present prices in the Mid-Continent. There has been no change in the fuel oil situation so far as Group 3 is concerned. As has been explained several times previously contract requirements and an intra-state demand leave little available for long hauls and outside competition has not as yet forced refiners to lower their prices. Gas oil is unchanged.

Distillates

Group 3 prices on 38-40 distillates advanced from ⅛ to ¼ cent. The advance was an expected development. A few plants favorably situated are moving this product as high as 3¾ cents on short hauls. It is said that jobbers did not accumulate so large stocks as is customary and with an increased demand they have been especially eager to buy. Present prices are not prohibitive and higher prices are expected by many.

Natural Gasolines

Natural gasolines advanced ¼ to ½ cent. Some Grade A was sold in Group 3 during the past week for 8 cents and practically none was available under 7¾ cents. Some manufacturers state they are selling all grades for the same price. The demand for this product continues strong and the price advance is an expected development of a situation in which the supply is adequate. This advance, coming at the first of the month, augurs well for the price situation over the month at least. Present prices permit the profitable operation of the larger and more efficient plants which furnish the bulk of the product in Oklahoma.

Kerosene

Although the quotations are unchanged, kerosene has been stronger during the past week. The prevailing price for months has been 3¾ to 4 cents on 41-43 and 4 to 4½ cents on 42-43. However, there have been brief periods during the past few months when the bulk of the product moved out of Group 3 at the top quotations. This has been true during the past week. Some of the 41-43 grade has been sold for resale at 3¾ cents but in a majority of cases marketers have been compelled to pay 3⅞ cents while the product is moving direct to the trade at 4 to 4¼ cents.

Many refiners believe that prices should be advanced. Tank wagon prices have been generally firm for months and the jobber has had an exceptionally wide margin in marketing the product. The kerosene tank wagon at many points is higher than the gasoline tank wagon and many of the trade fear a reduction unless prices are advanved at the refineries. Many expected that this advance would materialize early in the fall. According to latest available reports, kerosene stocks were not large. However, all efforts to advance prices both in the Mid-Continent and other points have been futile and many do not believe that prices will be materially changed over the remainder of the fall and winter months.

Road Oil

Road oil prices have been reduced during the past two weeks by a few companies. The season is holding out better than usual, allowing plants to reduce their stocks to a minimum. Most of the orders placed recently have been for small amounts.

Neutrals

The situation in regard to neutrals is confusing. Two weeks ago Cosden & Co. made a general advance on all grades. Some companies who followed the lead of Cosden have lowered their prices to their former quotations stating they were unable to sell at the new prices. This has brought an unusual situation in which prices on some grades vary from 1 to 4 cents. Some of the smaller plants

(Continued on Page 198)

REFINED MARKET BAROMETER

There were no important changes in refined products during the past week except the 15-cent reduction in bunker oil announced on Monday by the Standard Oil Co. of New Jersey. There were a few reductions on other products in some refining areas but markets were generally firm or advancing. Reports indicate a seasonable falling off in gasoline consumption with a fair demand at the refineries. Kerosene firm to strong with price advances in the East. Fuel oil prices were reduced in some areas but market was generally firm. Other products unchanged.

Mid-Continent—Markets were generally firm. Natural gasoline advanced in price from ¼ to ½ cent. Demand for blends improved and prices were advanced. Fair movement of New Navy reported from all sections, with no price changes. Although there were no price changes except in North Texas the fuel oil market was not so strong as last week and lower prices are expected by many. North Texas fuel oil was weak. Heavy export buying of kerosene has aided domestic market and prices were advanced where there were any changes. Strong demand for distillates. Neutrals unchanged.

Atlantic Seaboard—Bunker oil was reduced 15 cents by the Standard Oil Co. of New Jersey. Most important feature of markets is the introduction of furnace oil for use in home oil burners. At present it is available in limited quantities with a strong demand. Product a development of an insistent public demand for oil-burning equipment for use in home furnaces. Gasoline weak, although tank wagon market is firm following recent reductions. Export market uncertain. Receipts of crude and refined products establish new record.

Pennsylvania—Demand for kerosene strong and prices advanced. Strong demand for cylinder stocks with several purchases by large companies. Demand for gasoline fair and refiners have been able to hold prices. Fuel oil prices advanced due to a continued strong demand. Neutrals weak.

Chicago—Gasoline tank wagon market in Standard of Indiana territory unsettled with reductions at scattered points. Fair demand for gasolines. Natural gasolines advance. Good demand for kerosene and prices were firm. Fuel oil prices unchanged with more available than a week ago. Satisfactory demand for lubricants.

Gulf Coast—Demand for neutrals largely confined to the heavy oils. There is very little "distress" stock, the larger plants buying from the smaller concerns whenever their stocks accumulate. Movement of gas and fuel oils improved with no important price changes on any products.

Oil Equipment Headquarters

Why MORRISON SWING JOINTS *are* LEAK PROOF

MORRISON BROTHERS Swing Joints are unconditionally guaranteed to serve satisfactorily and to **not leak.**

Unlike ordinary swing joints, there is no metal-to-metal contact in the Morrison joint. A special packing bears all the pressure. Its use makes the joint flexible without any possibility of wear. The joints are always tight, yet they move freely even under pressure.

Ordinary joints, with their metal-to-metal contact, are difficut to move when tightened to prevent leakage. When they become worn sufficiently to become flexible they invariably leak and cause oil waste.

The uncommon ease and convenience with which the Morrison swing joints are handled and their entire freedom from sticking and wear have brought them into exceedingly wide favor.

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Everything *in Oil Equipment*

BRASS PRODUCTS—
- Self-Closing Truck Tank Faucet
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- Self-Closing Line Valves
- Self-Closing Angle Valves
- By-Pass Valves
- Angle By-Pass Valves
- Straight Check Valves
- Curb Pump Angle Valves
- Hose Nozzles
- Frost-Proof Drain Valves
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- Foot Valve
- Angle Foot Valve
- Automatic Fillers
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TRUCK TANKS—
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- Single and Double Units

MISCELLANEOUS—
- Grease Kettles
- Agitators
- Unloading Racks

Morrison Bros.

"OIL EQUIPMENT HEADQUARTERS"

AMERICAN PETROLEUM INSTITUTE TO CONSIDER USES OF FUEL OIL AT ANNUAL MEETING

At a meeting of the board of directors of the American Petroleum Institute held on September 24, it was determined:

1. To have the annual meeting of the Institute at the Statler Hotel, St. Louis, Mo., the second week in December. The exact dates and program will be announced later.

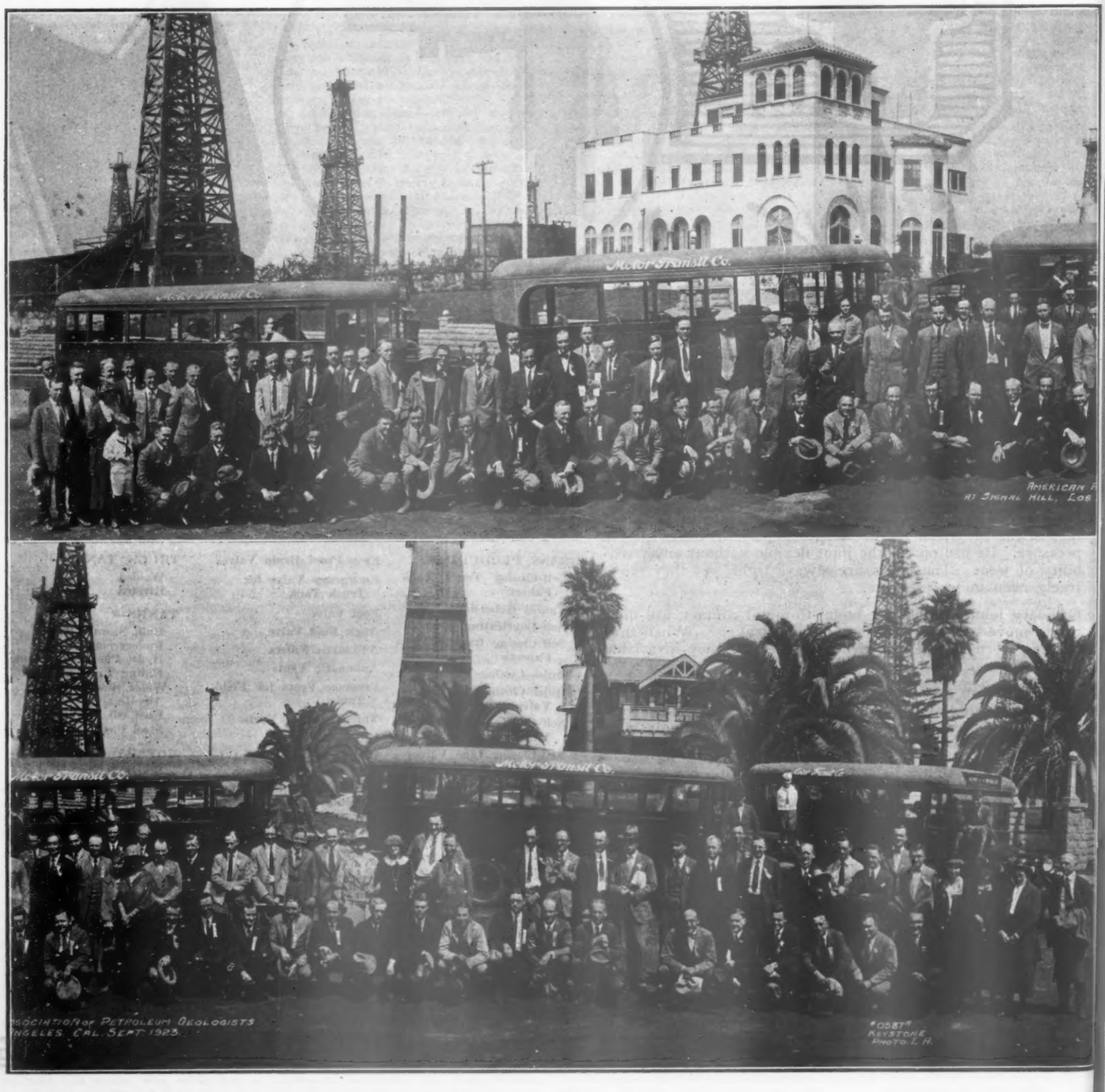
2. To appoint a sub-committee of the board to study the utilization of fuel oil and distillates and to report to the board at the annual meeting whether a program to further develop their use should be adopted by the Institute.

3. To request the cooperation of the entire oil industry in collecting and disseminating currently the facts as to production, consumption and storage of petroleum and its products.

4. To appoint a committee to study the production and the conservation of petroleum and its products.

Amos L. Beaty heads the committee of the American Petroleum Institute which will make a study of the general situation in the petroleum industry, especially with regard to the control of production, and will make recommendations to be submitted probably at the annual meeting of the institute in December.

Association of Petroleum Geologists at Signal Hill, Cal.



PERFECTION VAPOR PRESSURE TANKS
WOOD, AND BOLTED STEEL TANKS

Complete Perfection Vapor Pressure Battery in Burbank Field, Okla.

EVAPORATION'S TERRIFIC TOLL

The following losses by evaporation took place in steel tanks with no seepage, with wooden roof covered with paper and tarred and apparently tight. The oil was of 40 degrees Baume gravity and the tanks were of a diameter of 114½ feet.

Capacity in bbls.	Loss Gauge	Actual Loss bbls.	Per Cent Period Loss	
55,000	1 ft. 1¾ in.	2,101	5	mo. 4.2
55,000	1 ft. 2⅝ in.	2,235	4½	mo. 4.6
55,000	11½ in.	1,700	3½	mo. 3.4
55,000	1 ft. ½ in.	1,910	3¼	mo. 3.8

The above figures indicate that there might be a loss of 1 per cent per month in wood roof steel tanks and this might amount to 6,000 barrels per year per tank.

YES, WE HAVE NO STORAGE LOSSES

The principal losses in the storage of crude petroleum are due to evaporation, to fire and to seepage.
—From Losses in the Storage of Crude by Dr. Roy Cross

Dr. Cross is absolutely right.

He hit the nail directly on the head when he outlined the principal reasons for losses in oil field storage.

Evaporation, fire and seepage are the relentless enemies of every oil producer. He must be on guard day and night.

Most oil companies, and numbered among them are the principal big producers in America, have discovered that all these storage menaces can be avoided by the mere attention to the class and kind of storage tanks.

For instance in the selection of lease tanks, they likely will select the Perfection Vapor Pressure line.

These producers have absolutely proved to their own satisfaction that evaporation is rendered negligible; furthermore, the insurance companies consider the fire risk so low on Perfection Vapor Pressure tanks that the premium is hardly worth mentioning. Of course seepage has no place in a tank built of the best bolted rust-resisting steel.

If you are not in the list of satisfied oil producers who are enjoying immunity from storage losses, look up our nearest representative today. It will not cost you a cent to figure on your lease requirements.

Make our booth your headquarters at the National Petroleum Exposition.

Black Sivalls & Bryson
INC.

BARTLESVILLE ~ OKLAHOMA

Branch offices in all principal active fields

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

CHICAGO DIST. (Based on Group 3)—	Oct. 2		Sept. 25		Sept. 18	
50-52 450 end point (Naphtha)	.06	.06½	.06	.06½	.06	.06½
56-58 450 end point	.06¼	.06½	.06¼	.06½	.06¼	.06½
58-60 437 end point (New Navy)	.06½	.07	.06½	.07	.06½	.06¾
60-62 400 end point	.08¼	.08½	.08	.08½	.08	.08½
64-66 375 end point	.09½	.10	.09½	.10	.09½	.10
68-70 360 end point	.10½	.11	.11	.11½	.11	.11½
OKLAHOMA (Group 3)—						
50-52 450 end point (Naphtha)	.06	.06½	.06	.06½	.06	.06½
56-58 450 end point	.06	.06½	.06	.06½	.06	.06½
58-60 437 end point (New Navy)	.06¼	.06¾	.06½	.06¾	.06½	.06¾
60-62 400 end point	.08	.08½	.08¼	.08½	.08¼	.08½
64-66 375 end point	.09¼	.09½	.09¼	.09½	.09¼	.09½
68-70 350-365 end point	.10¾	.11	.10¾	.11	.10¾	.11
KANSAS—						
58-60 437 end point (New Navy)	.06¾	.07	.06¾	.07	.06¾	.07
NORTH TEXAS—						
48-52 450 end point (Naphtha)	.06	.06¼	.06	.06¼	.06	.06¼
50-52 440 end point (Naphtha)	.06	.06½	.06	.06½	.06¼	.06½
56-58 450 end point	.06	.06¼	.06	.06¼	.06	.06¼
58-60 437 end point (New Navy)	.06¾	.06¾	.06¼	.06¾	.06¼	.06¾
60-62 400 end point	.07¾	.08¼	.07¾	.08¼	.07¾	.08¼
64-66 390 end point	.08½	.09	.08½	.09	.08½	.09
NORTH LOUISIANA—						
56-58 450 end point	.06½	.07	.06½	.06¾	.06½	.06¾
58-60 437 end point (New Navy)	.07	.07¼	.06¾	.07	.06¾	.07
60-62 400 end point	.08¼	.08½	.08¼	.08½	.08¼	.08½
ROCKY MOUNTAIN STATES—						
58-60 437 end point (New Navy)	.11¼		.11¼		.11¼	
PENNSYLVANIA—						
52 Naphtha	.11		.11		.11	
54 Naphtha	.11¼		.11¼		.11¼	
56 Gasoline	.11⅝		.11⅝		.11⅝	
58 Gasoline	.11¾		.12		.12	
60 Gasoline	.12¼		.12¼		.12¼	
62 Gasoline	.14		.14		.14	
64 Gasoline	.15		.15		.14½	
66 Gasoline	.17½		.17½		.17½	
68-70 Gasoline	.18¼		.18¼		.18¼	

NATURAL GASOLINE

CHICAGO DIST. (Based on Group 3)—	Oct. 2		Sept. 25		Sept. 18	
Grade A, 72-78 under 375 e.p., rec. 90%	.07⅜	.08	.07½	.07¾	.07¼	.07½
Grade B, 76-82, 375 end point, rec. 85%	.07¼	.07¾	.07	.07½	.07	.07¼
Grade C, 80-88, 350 end point, rec. 78%	.07	.07½	.07	.07½	.07	.07¼
OKLAHOMA (Group 3)—						
Grade A, 72-78, under 375 e.p., rec. 90%	.07¾	.08	.07½	.07¾	.07½	.07¾
Grade B, 76-82, 375 end point, rec. 85%	.07½	.07¾	.07	.07½	.07	.07½
Grade C, 80-88, 350 end point, rec. 78%	.07½	.07¾	.07	.07¼	.07	.07¼
Grade D, 88-92, 350 end point	.07½	.07¾	.07	.07¼	.07	.07¼
NORTH TEXAS—						
80-84 compression	.07	.07¼	.07	.07¼	.07	.07¼
84-90 compression	.07	.07¼	.07	.07¼	.07	.07¼
72-76 absorption	.07	.07½	.07¼	.07½	.07¼	.07½
76-82 absorption	.07	.07½	.07	.07½	.07	.07½
NORTH LOUISIANA—						
Grade B, 76-82, 375 end point, rec. 85%	.07¼	.07¾	.07¼	.07¾	.07	.07½

MOTOR NATURAL GASOLINE (BLEND)

CHICAGO DIST. (Based on Group 3)—	Oct. 2		Sept. 25		Sept. 18	
60-62 450 end point	.06½	.07	.06	.06½	.06	.06½
64-66 450 end point	.06½	.07	.06¼	.06¾	.06	.06½
OKLAHOMA (Group 3)—						
60-62 450 end point	.06¼	.06¾	.06¼	.06½	.06¼	.06½
64-68 450 end point	.06½	.07	.06¼	.06½	.06¼	.06½
68-70 430-435 end point	.06¾	.07¼	.06¼	.06½	.06½	.06¾
NORTH TEXAS—						
58-62 440 end point	.06¼	.06½	.06¼	.06½	.06¼	.06½
58-60 450 end point	.06¼	.06½	.06¼	.06½	.06¼	.06½
PENNSYLVANIA—						
*60-62	.11½		.11½		.11½	
*64-66	.11½		.11½		.11½	
*66-68	.11½		.11½		.11½	
*68-70	.11½		.11½		.11½	

*At Sistersville, W. Va.

BURNING OIL

CHICAGO DIST. (Based on Group 3)—	Oct. 2		Sept. 25		Sept. 18	
41-43 water white Kerosene	.04	.04½	.03⅞	.04½	.03⅞	.04
42-44 water white Kerosene	.04¼	.04½	.04	.04½	.04	.04¼
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.03⅞	.04½	.03¾	.04	.03¾	.04
42-43 water white Kerosene	.04	.04¼	.04	.04¼	.04	.04¼
44-46 Kerosene Distillate	.05	.05¼	.05	.05¼	.05	.05¼
45-47 Kerosene Distillate (500 end point)	.05½	.06	.05½	.06	.05½	.06
46-48 Kerosene Distillate (480 end point)	.06	.06½	.06	.06½	.06	.06½
KANSAS—						
41-43 water white Kerosene	.04½	.04¾	.04½	.04¾	.04¼	.04¾
NORTH TEXAS—						
41-43 water white Kerosene	.03¾	.04	.03¾	.04	.03¾	.04
41-43 prime white Kerosene	.03½	.03⅝	.03½	.03⅝	.03½	.03⅝
40-42 prime white Distillate	.03¼	.03½	.03¼	.03½	.03¼	.03½
NORTH LOUISIANA—						
41-43 prime white Kerosene	.03¾	.04	.03¾	.04	.03¾	.04
42-43 water white Kerosene	.04	.04¼	.04	.04⅛	.04	.04⅛
ROCKY MOUNTAIN STATES—						
40-42 prime white Kerosene	.06¾		.06¾		.06¾	
PENNSYLVANIA—						
43 Kerosene prime white	.06½		.06		.06	
45 Kerosene water white	.07		.06½		.06⅓	
46 Kerosene water white	.07½		.07		.07	
47 Kerosene water white	.08		.07½		.07½	
36 Miners' Neutral	.07		.07		.07	

FUEL OILS

CHICAGO DIST. (Based on Group 3)—	Oct. 2		Sept. 25		Sept. 18	
24-26 Fuel Oil (sellers' cars, Group 3)	.85	.90	.85	.90	.85	.90
22-24 (El Dorado)	.80	.85	.80	.85	.75	.80
18-20 (Smackover)	.70	.80	.70	.75	.70	.75
32-36 Gas Oil	.02⅜	.02½	.02⅜	.02½	.02⅜	.02½
38-40 Straw distillate	.02⅞	.03⅛	.02⅞	.03	.02¾	.03
KANSAS—						
24-26 Fuel Oil	1.00	1.10	1.00	1.10	1.10	1.15
32-36 Gas Oil	.02½	.02¾	.02⅝	.02¾	.02⅝	.02¾
38-40 Dist illate	.03½	.03¾				
OKLAHOMA (Group 3)—						
24-26 Fuel Oil (buyers' cars)	.77½	.82½	.08	.85	.77½	.82½
24-26 Fuel Oil (sellers' cars)	.82½	.87½	.82½	.87½	.82½	.87½
28-30 Fuel Oil (sellers' cars)	.90	.95	.95	1.00	.95	1.00
32-36 Gas Oil	.02¼	.02½	.02¼	.02½	.02¾	.02½
38-40 Straw Distillate	.03¼	.03½	.02⅞	.03⅛	.02⅞	.03
NORTH TEXAS—						
24-26 Fuel Oil	.70	.75	.75	.80	.75	.80
26-30 Fuel Oil	.75	.80	.80	.85	.80	.85
32-36 Gas Oil	.02¼	.02⅜	.02¼	.02⅜	.02¼	.02½
36-38 Gas Oil	.02½	.02⅝	.02½	.02⅝	.02½	.02⅝
38-40 Straw Distillate	.02⅞	.03⅛	.02⅞	.03	.02¾	.03
NORTH LOUISIANA—						
20-22 Fuel Oil	.75	.80	.80	.85	.80	.85
32-36 Gas Oil	.02¾	.03	.02¾	.03	.02¾	.03
38-40 light straw distillate	.03		.03		.03	
GULF COAST (South Texas)—						
Gas oil	.03½	.03¾	.03¼	.03½	.03¼	.03¾
Fuel oil	1.20	1.30	1.20	1.30	1.20	1.30
PENNSYLVANIA—						
30-34 Fuel Oil	.05½		.05¼		.05	
36-40 Fuel Oil	.05⅝		.05½		.05½	
34 Neutral	.08		.07¼		.07¼	

ROAD OILS

OKLAHOMA (Group 3)—	Oct. 2		Sept. 25		Sept. 18	
50-60 Asphaltic content	.95	1.05	1.00	1.10	1.00	1.10
60-70 Asphaltic content	1.05	1.15	1.10	1.20	1.10	1.20
CHICAGO DIST. (Based on Group 3)—						
50-60 Asphaltic content (Group 3)	1.00	1.10	1.00	1.10	1.00	1.10

NEUTRAL OILS

OKLAHOMA (Group 3)—	Oct. 2		Sept. 25		Sept. 18	
Pale Neutrals:						
70-80 vis., 2½ color, 20-25 cold test	.04¼	.04½	.04¼	.04½	.04¼	.04½
100 vis., 2 color, 20-25 cold test	.06	.06½	.05¼	.05½	.05¼	.05½
100 vis., 3 color, 20-25 cold test	.05½	.06	.04¾	.05	.04¾	.05
150 vis., 3 color, 20-25 cold test	.11½	.12	.11½	.12	.11½	.12
150 vis., 4 color, 20-25 cold test	.11	.11½	.11	.11½	.11	.11½
180 vis., 4 color, 23-28 cold test	.13¼	.13¾	.13¼	.13¾	.13¼	.13¾
180 v.s., 3 color, 23-28 cold test	.14	.14½	.14	.14½	.14	.14½
200 vis., 3 color, 23-28 cold test	.15	.15½	.15	.15½	.15	.15½
200 vis., 4 color, 23-28 cold test	.14¼	.14¾	.14¼	.14¾	.14¼	.14¾
220 vis., 3 color, 25-30 cold test	.16	.16½	.16	.16½	.16	.16½
220 vis., 4 color, 25-30 cold test	.15¼	.15¾	.15¼	.15¾	.15¼	.15¾
240 vis., 4 color, 25-30 cold test	.16¼	.16¾	.16¼	.16¾	.16¼	.16¾
280 vis., 3 color, 25-30 cold test	.19½	.20	.19½	.20	.19½	.20
280 vis., 4 color, 25-30 cold test	.18½	.19	.18½	.19	.18½	.19
30 vis., 3 color, 25-30 cold test	.20	.20½	.20	.20½	.20	.20½
Red Neutrals:						
180 vis., 5 color, 23-28 cold test	.12½	.13	.12½	.13	.12½	.13
180 vis., 6 color, 23-28 cold test	.11¾	.12¼	.11¾	.12¼	.11¾	.12¼
200 vis., 5 color, 23-28 cold test	.13½	.14	.13½	.14	.13½	.14
200 vis., 6 color, 23-28 cold test	.12¾	.13¼	.12¾	.13¼	.12¾	.13¼
220 vis., 5 color, 25-30 cold test	.14½	.15	.14½	.15	.14½	.15
220 vis., 6 color, 25-30 cold test	.13¾	.14½	.13¾	.14½	.13¾	.14¼
240 vis., 5 color, 25-30 cold test	.15½	.16	.15½	.16	.15½	.16
240 vis., 6 color, 25-30 cold test	.14¾	.15¼	.14¾	.15¼	.14¾	.15¼
280 vis., 5 color, 25-30 cold test	.17½	.18	.17½	.18	.17½	.18
280 vis., 6 color, 25-30 cold test	.16½	.17	.16½	.17	.16½	.17
300 vis., 5 color, 25-30 cold test	.16½	.17	.16½	.17	.16½	.17
150-160 vis., 1 color, 40-50 cold test	.06½	.07	.06½	.07	.06½	.07
190-200 dark green, 40-50 cold test	.05½	.06	.05½	.06	.05½	.06
600 steam refined	.16		.16		.16	
590-600 Bright Stock	.28		.28		.28	
600-610 Bright Stock	.33		.33		.33	
Waxes:						
124-126 White Crude Scale Wax	.02⅞		.02⅞		.02⅞	

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

	Oct. 2	Sept. 25	Sept. 18
150, 3 color	.22	.22	.22
180, 3 color	.24	.24	.24¼
200, 3 color	.26	.26	.26¼
220, 3 color	.29	.29	.29
600, steam refined	.10¾	.10¾	.10
635, steam refined	.11¾	.11¾	.11½
650, steam refined	.12½	.12½	.12½
600, Pennsylvania flash	.15½	.15½	.15½
630, Pennsylvania flash	.20	.19½	.19½
*550, E filtered	.13¾	.13¼	.13¼
*600, E filtered	.15¾	.15½	.15½
600, E filtered	.13¾	.13½	.13½
600, D filtered	.20½	.20	.20
550, E filtered	.13¼	.12¾	.12¾
550, D filtered	.15½	.15½	.15½
Pennsylvania Bright Stock	.32	.32	.32
†122-124 White Crude Scale Wax	.03	.03	.03
†124-126 White Crude Scale Wax	.03⅛	.03⅛	.03⅛
300 Mineral Seal	.07½	.07	.07

*At Warren, Penn. †At New York City.

GULF COAST (South Texas)—

Lubricating Stocks:						
Zero Black	.06	.07	.06	.07	.06	.07
No. 2 color, 100 vis., pale oil	.07	.08	.07	.08	.07	.08
No. 2½ color, 150 vis., pale oil	.09½	.11	.09½	.10½	.09½	.10½
No. 3 color, 200 vis., pale oil	.10	.12	.10½	.11½	.10½	.11½
No. 3½ color, 300 vis., pale oil	.14	.15½	.14	.15	.14	.15
No. 3½ color, 500 vis., pale oil	.16	.17	.16	.17	.16	.17
No. 3½ color, 750 vis., pale oil	.22½	.23½	.23	.24	.23	.24½
No. 1½ color, 150 vis., pale, filtered	.20½	.21½	.20½	.21½	.20½	.21½
No. 2 color, 200 vis., pale, filtered	.23½	.25	.23½	.24½	.23½	.24½
No. 2½ color, 500 vis., pale, filtered	.31	.33	.31	.33	.31	.33
No. 2½ color, 750 vis., pale, filtered	.40	.41	.40	.41	.40	.41
No. 5 color, 200 vis., red oil	.09	.10½	.09	.10½	.09	.10½
No. 5 color, 300 vis., red oil	.12	.13	.12	.13	.12	.13
No. 5 color, 500 vis., red oil	.14	.15	.14	.15	.14	.15
No. 5 color, 750 vis., red oil	.22	.23	.22	.23	.22	.23
No. 5, 1200 vis., red oil	.24	.26	.24	.26	.24	.26

NEW YORK DOMESTIC MARKET

Motor Gasoline:	Oct. 2	Sept. 25	Sept. 18
Greater New York, in steel barrels	.18½	.18½	.18½
New York State (outside Greater New York and New England, tank wagon	.18½	.18½	.18½
New Jersey, tank wagon	.18½	.18½	.18½
V.M.P. Naphtha, in steel barrels	.17½	.17½	.17½
Kerosene:			
Greater New York, tank wagon	.14	.14	.14
New York State (outside Greater New York and New England, tank wagon	.14	.14	.14
California gasoline in bulk, delivered at N. Y.	.10½	.10½	.10½
New Jersey, tank wagon	.13	.13	.13
Lubricating Oil (Industrial) at refinery, Bayonne, N. J.:			
Cylinder, extra light filtered, in barrels	.37½	.37½	.37½
Cylinder, light filtered, in barrels	.32½	.32½	.32½
Cylinder, Bright Stock	.44½	.44½	.44½
Cylinder, steam refined (600)	.22½	.22½	.22½
Black, in bulk	.08½	.08½	.08½
Bloomless, white, 30-31 gravity, 170 vis.	.41½	.41½	.41½
Bloomless, 885 specific gravity	.16½	.16½	.16½
Red Paraffin:			
170 viscosity	.19	.19	.19
212 viscosity	.21	.21	.21
265 viscosity	.23	.23	.23
295 viscosity	.26	.26	.26
Paraffin, 903 specific gravity	.24½	.24½	.24½
Spindle, 200 vis. at 100	.28½	.28½	.28½
Lubricating Oil (motor), discount to dealers:			
Cylinder, in barrels	1.00	1.00	1.00
Steam tractors, in barrels	1.00	1.00	1.00
Transmission and differential, in barrels	.09½	.09½	.09½
Motor Grease, in barrels, pounds	.13	.13	.13
*Fuel Oil:			
Bunker Oil, 14 plus, delivered in barges, bbl.	1.45	1.60	1.60
Diesel Oil, at refinery, gallon	.04	.04½	.04½
Furnace oil, tank wagon, gallon	.10		
Gas Oil, delivered in New York	.04¼	.05	.05
Wax, fully refined:			
120-122 a.m.p.	.03¼	.03¼	.03½
125-127 a.m.p.	.03¾	.03¾	.03¾
130-132 a.m.p.	.04¼	.04¼	.04¼
135-137 a.m.p.	.05¼	.05¼	.05¼

*Lighterage, 6.5c a barrel extra.

NEW YORK EXPORT PRICES

	Oct. 2	Sept. 25	Sept. 18
Motor Gasoline, in cases, gallon	.25.65	.26.65	.26.65
Motor Gasoline, U. S. Navy, spec., gallon	.12	.12	.12
Naphtha, 60° F., 59-61 spec. grav.	.13	.13½	.13½
Naphtha, 60° F., 63-66 spec. grav.	.15	.15½	.15½
Naphtha, 60° F., 66-68 spec. grav.	.16½	.17	.17
Kerosene:			
Standard white, in bulk, gallon	.05½	.05½	.05½
Standard white, in barrels, gallon	.12½	.12½	.12½
Standard white, in cases, gallon	.15.4	.15.4	.15.4
Water white, in bulk, gallon	.06½	.06½	.06½
Water white, in barrels, gallon	.13½	.13½	.13½
Water white, in cases, gallon	.16.4	.16.4	.16.4

CRUDE OIL PRICES

Sept. 19.—Prairie Oil and Gas Co. abandoned its schedule of prices for Oklahoma, Kansas and North Texas crudes and posted following prices: Below 33° gravity, 90 cents; 33° to 39.9° gravity, $1.30; 40° gravity and above, $1.75. Change met by the Sinclair Crude Oil Purchasing Co., Gulf Pipe Line Co., Cosden Pipe Line Co. and Gypsy Oil Co. Empire Pipe Line Co. met price except in Healdton district where the company continued to pay price established by the Magnolia Petroleum Co.

Magnolia Petroleum Co. met the Prairie prices on all grades above 33° gravity. The company posted the following prices for the lower gravities: Below 28° gravity, 50 cents; 28° to 30.9° gravity, 70 cents; 31° to 32.9° gravity, 90 cents.

September 19.—The Humble Oil & Refining Co. adopted the Prairie Oil & Gas Co.'s prices for North Texas

September 20.—The Joseph Seep Purchasing Agency reduced all grades of Pennsylvania crude 25 cents. The Ohio Oil Co. reduced Lima, Indiana, Illinois, Princeton, Plymouth, Waterloo and Wooster crudes 25 cents. Cabell, Somerset medium and Somerset light oils were reduced 15 cents per barrel as was also Corning crude. The Texas Co. adopted the Prairie Oil & Gas Co.'s schedule for all districts except Healdton grades, where the Magnolia Petroleum Co.'s quotations on the lower grades are used.

September 21.—The Ohio Oil Co. and the Mid-West Refining Co. made the following changes in Wyoming crude quotations: Grass Creek, Elk Basin, Big Muddy and Rock Creek crudes were reduced 35 cents per barrel. Lance Creek crude was reduced 50 cents and Mule Creek crude was reduced 20 cents per barrel. Salt Creek, Osage, Greybull, Torchlight and Hamilton Dome crudes were also reduced 35 cents per barrel.

Oklahoma and Kansas

Below 33°	$ .90
33° to 39.9°	1.30
40° and above	1.75
(Magnolia Petroleum Co., and The Texas Co., Healdton grade)	
Below 28°	$ .50
28° to 30.9°	.70
31° to 32.9°	.90

Arkansas and North Louisiana

Caddo, 38° and above	$1.25
35° to 37.9°	1.15
32° to 34.9°	1.10
Below 32°	.75
Homer, 35° and above	1.25
33° to 34.9°	1.15
31° to 32.9°	1.10
Below 31°	.75
Haynesville, 33° and above	1.20
Below 33°	1.10
El Dorado, 33° and above	1.25
Below 33°	1.10
Bull Bayou, 38° and above	1 15
35° to 37.9°	1.05
32° to 34.9°	1.00
De Soto	1.25
Crichton	.90
Bellevue	.75
Smackover, 26° and above	.75
25° to 25.9°	.60
24° to 24.9°	.50
Below 24°	.40

Wyoming and Montana

Rock Creek, (Wyo.)	$ .90
Salt Creek	.90
Big Muddy	.75
Mule Creek	.75
Grass Creek	1.35
Elk Basin	1.35
Lance Creek	1.20
Osage	1 35
Cat Creek (Mont.)	1.70
Sunburst (Mont.)	.70
Greybull and Torchlight	1.35
Hamilton Dome	.90

Lander and Lost Soldier based on contracts covering entire production of

North Texas and North Central Texas

Corsicana light	1.00
Corsicana heavy	.50
Mexia	1.00
Currie	1.00
Powell	1.00
Moran, Burkburnett, Electra, Archer County, Stephens County, Strawn, Ranger, Desdemona, Pioneer and Young County.	
Below 33°	$ .90
33° to 39.9°	1.30
40° and above	1.75

Gulf Coast

Gulf Pipe Line Co., Goose Creek, Hull, Sour Lake, Batson, Saratoga, Spindletop, Orange, Vinton, Edgerly, Jennings	$1.00
Grade "B," Pierce Junction, Blue Ridge	.90
The Sun Pipe Line Co., Grade "A," Humble, Hull, Goose Creek, Orange, Spindletop, Saratoga, Batson, Dayton, Sour Lake	1.00
Humble Pipe Line Co., Goose Creek, Hull, West Columbia, Orange	1.00
Grade "B," Pierce Junction	.90
Texas Pipe Line Co., Humble, West Columbia, Orange, Sour Lake, Saratoga, Batson, Vinton, Jennings, Markham	1.00
Sinclair Pipe Line Co., West Columbia, Damon Mound	1.00

California

14° to 19.9°	$ .60
20° to 20.9°	.61
21° to 21.9°	.62
22° to 22.9°	.65
23° to 23.9°	.68
24° to 24.9°	.71
25° to 25 9°	.74
26° to 26.9°	.77
27° to 27.9°	.80
28° to 28.9°	.83
29° to 29.9°	.86
30° to 30.9°	.89
31° to 31.9°	.92
32° to 32.9°	.95
33° to 33.9°	.98
34° to 34.9°	1.01
35° gravity and above	1.04

Eastern States

Penna Grade Oil in New York Transit Lines	$2.75
Bradford District Oil in National Transit Lines	$2.75
Penna Grade Oil in National Transit Lines	2.50
Penna Grade Oil in South West Pa. Pipe Lines	2.50
Penna Grade Oil in Eureka Pipe Line Lines	2.50
Penna Grade Oil in Buckeye Pipe Line Lines	2.50
Corning Grade Oil in Buckeye Pipe Line Lines	1.45
Cabell Grade Oil in Eureka Pipe Line Lines	1.35
*Somerset Medium Oil in Cumberland Pipe Line Lines	1.25
*Somerset Light Oil in Cumberland Pipe Line Lines	1.40
Ragland Grade Oil in Cumberland Pipe Line Lines	.75
Lima	1.68
Wooster	1.50
Illinois	1.47
Indiana	1.48
Princeton	1.47
Plymouth	.85
Waterloo	.95
†Petrolia, Canada	2.28
†Oil Springs, Canada	2.35

*Somerset oil commands 6 cents over the above posted price.

†Plus Government bounty of 52½c.

Mexican Crude

*Tuxpam (f.o.b. Mexican ports)	$1.00
†Panuco (f.o.b. Mexican ports)	.55
Tuxpam (New York)	1.55
Panuco (New York)	.97

*Plus 30.34c tax. †Plus 16.93c tax. Prices based on contracts.

TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States, as furnished by the larger marketing concerns, Oct. 2

STANDARD OIL CO. (INDIANA)

Main Service Station Price

	Gasoline Tank wagon	Incids tax	Service of station	Kero. Tank wagon
Chicago district.	13.4	..	15.4	11.5

Tank wagon prices on Jan. 25, 1921, down 2c on g., 3c on k., Feb. 1, both down 2c; April 28, both down 3c; July 25 g. down 2c; Oct. 15, g. up 1c; Oct. 23, k. up 1c; Nov. 9, g. up 1¼c; k. 1c; April 10, 1922, g. up 1½c; May 3, g. up 1c; June 27, both up 1c; July 19, g. down 2c; k. down 1c; Oct. 10, g. down 2c; Oct. 31, g. down 1c; Feb. 5, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14, g. down 6.6c.

Decatur, Ill.	14.2	..	16.2	12.0
Joliet	13.4	..	15.4	12.2
Peoria	14.2	..	16.2	12.0
Quincy	14.0	..	16.0	11.8
Davenport, Ia.	14.5	..	16.5	12.4
Des Moines	12.5	..	14.5	12.4
Keokuk	14.5	..	16.5	12.4
Sioux City	14.1	..	16.1	12.0
Duluth, Minn.	15.2	..	17.2	13.1
Minneapolis	14.9	..	16.9	13.1
La Crosse, Wis.	15 2	..	17.2	12.9
Milwaukee	14.0	..	16.0	11.7
Madison	14.3	..	16.3	12.0
Detroit, Mich.	12.8	..	14.8	12.7
Grand Rapids	14.7	..	16.7	12.6
Saginaw	14.9	..	16.9	12.8
Evansville, Ind.	16.0	2.0	18.0	12.0
Fort Wayne	16.4	2.0	18.4	12.4
Indianapolis	16.2	2.0	18.2	12.2
South Bend	16.4	2.0	18.4	12.4
Fargo, N. D.	16.6	1.0	18.6	14.7
Huron, S. D.	16.0	2.0	16.0	13.6
Sioux Falls	15.5	2.0	15.5	13.1
*Kansas City	13.9	1.0	15.9	10.8
Springfield	13.8	..	15.8	11.7
St. Louis	13.6	..	15.9	11.5
*St. Joseph	14.3	.5	16.3	11.7
Wichita, Kans.	13.8	..	15.8	11.3

*City tax.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline Tank wagon	Incids tax	Service of station	Kero. Tank wagon
Pittsburgh, Pa.	18.0	*	23.0	14.0
Philadelphia	18.0	*	23.0	14.0
Dover, Del.	19.0	1.0	22.0	14.0
Wilmington	19.0	1.0	22.0	14.0
Providence, R. I.	18.5	..	21.0	14.0
Springfield	18.5	..	21.0	14.0
Worcester	18.5	..	21.0	14.0
Hartford, Conn.	18.5	*	22.0	14.0
New Haven	18.5	*	22.0	14.0
Boston	18.5	..	21.0	14.0

*Pennsylvania tax of 2 cents and Connecticut tax of 1 cent are collected by the dealer and paid by him direct to the State.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline Tank wagon	Incids tax	Service of station	Kero. Tank wagon
Atlanta, Ga.	20.0	3.0	22.0	15.0
Augusta	20.0	3.0	22.0	14.0
Macon	20.0	3.0	22.0	14.5
Savannah	18.0	3.0	20.0	13.0
Birmingham, Ala.	18.0	2.0	20.0	14.5
Mobile	17.0	2.0	19.0	13.5
Montgomery	18.0	2.0	20.0	15.0
Clarksdale, Miss.	16.0	1.0	18.0	13.0
Jackson	16.0	1.0	18.0	11.0
Natchez	15.5	1.0	17.5	12.5
Vicksburg	16.5	1.0	18.5	12.5
Jacksonville, Fla.	18.0	3.0	20.0	13.0
Miami	23.0	3.0	22.0	14.5
Pensacola	18.0	3.0	20.0	13.5
Tampa	18.0	3.0	20.0	13.0
Covington, Ky.	18.0	1.0	20.0	13.0
Lexington	18.0	1.0	20.0	14.0
Louisville	17.0	1.0	19.0	13.0

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline Tank wagon	Incids tax	Service of station	Kero. Tank wagon
Denver, Colo.	17.0	2.0	19.0	13 5
Glenwood Spgs.	21.0	2.0	....	17.5
Pueblo	17.0	2.0	19.0	13.5
Basin, Wyo.	16.0	1.0	....	14.0
Casper	14.0	1.0	16.0	12.0
Cheyenne	16.5	1.0	17.5	13.5
Cody	17.0	1.0	....	15.0
Lander	16.0	1.0	....	14.0
Billings, Mont.	19.5	2.0	21.5	15.5
Butte	21.0	2.0	23.0	16.0
Great Falls	21.0	2.0	23.0	17.0
Helena	21.0	2.0	23.0	17.0
Miles City	20.5	2.0	22.5	16.5
Boise, Idaho	20.0	2.0	22.0	19.0
Salt Lake, Utah	22.0	2.5	24.0	16.5
Ogden	22.0	2.5	24.0	16.5
Albuquerque, N. M.	18.0	1.0	20.0	15.5

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline Tank wagon	Incids tax	Service of station	Kero. Tank wagon
Newark, N. J.	18.5	..	21.5	13.0
Atlantic City	18.5	..	21.5	13.0
Annapolis, Md.	19.0	1.0	22.0	13.0
Baltimore	19.0	1.0	22.0	12.0
Cumberland	19.0	1.0	22.0	14.0
Washington	18.0	..	21.0	12.5
Norfolk, Va.	20.0	3.0	23.0	12.0
Petersburg	21.0	3.0	23.0	13.5
Danville	21.0	3.0	23.0	14.0
Richmond	21.0	3.0	23.0	12.5
Roanoke	21.0	3.0	23.0	14.0
Keyser, W. Va.	20.0	2.0	23.0	14.0
Charleston	20.0	2.0	23.0	12.5
Parkersburg	19.0	2.0	21.0	11.0
Wheeling	20.0	2.0	23.0	12.5
Charlotte, N. C.	21.0	3.0	23.0	13.5
Hickory	21.5	3.0	23.5	14.0
Mt. Airy	21.0	3.0	23.0	13.5
Salisbury	21.5	3.0	23.5	14.0
Charleston	19.0	2.0	22.0	11.5
Columbia	21.0	3.0	23.0	13.5

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline Tank wagon	Incids tax	Service of station	Kero. Tank wagon
Dallas, Tex.	8.0	1.0	10.0	10.0
Fort Worth	8.0	1.0	10.0	10.0
Houston	14.0	1.0	18.0	11.0
San Antonio	14.0	1.0	17.0	11.0
El Paso	16.0	1.0	19.0	12.0
Muskogee, Okla.	12.0	1.0	16.0	9.0
Oklahoma City	10.0	1.0	14.0	9.0
Tulsa	12.0	1.0	17.0	9.0
Ft. Smith, Ark.	16.5	3.0	19.5	11.0
Little Rock	17.0	3.0	20.0	12.0
Texarkana	17.0	3.0	20.0	11.0

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline Tank wagon	Incids tax	Service of station	Kero. Tank wagon
New Orleans, La	13.5	1.0	16.5	11.0
Alexandria	14.5	1.0	17.5	12.0
Baton Rouge	13.0	1.0	16.0	10.5
Lake Charles	14.5	1.0	17.5	12.0
Shreveport	14.5	1.0	17.5	12.0
Memphis, Tenn.	16.0	2.0	19.0	13.0
Chattanooga	16.5	2.0	19.5	13.5
Knoxville	17.5	2.0	20.5	14.0
Nashville	16.5	2.0	19.5	13.0
Bristol	18.0	2.0	21.0	14.5
Little Rock, Ark.	17.5	3.0	20.5	12.0
West Helena	17.5	3.0	20.5	12.0

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline Tank wagon	Incids tax	Service of station	Kero. Tank wagon
Albany, N. Y.	19.0	..	21.0	13.0
*New York	18.5	..	22.0	14.0
Buffalo	16.0	..	20.0	14.0
Rochester	17.5	..	20.0	13.0
Syracuse	17.0	..	19.0	12.0
Boston, Mass.	18.5	..	21.0	12.0
Providence, R. I.	18.5	..	22.0	14.0
Augusta, Me.	18.5	1.0	23.0	14.0
Manchester	18.5	1.0	23.0	14.0
Burlington, Vt.	18.5	1.0	23.0	14.0

*Price in steel barrels.

OHIO

Standard Oil Co. (Ohio)

	Gasoline Tank wagon	Incids tax	Service of station	Kero. Tank wagon
All Ohio points.	17.0	..	19.0	13.0

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline Tank wagon	Incids tax	Service of station	Kero. Tank wagon
San Francisco.	13.0	2.0	16.0	16.5
Los Angeles	12.0	2.0	16 0	16.5
Fresno	14.5	2.0	17.5	17.5
Reno, Nev.	17.5	2.0	20.5	19.0
Portland, Ore.	16.0	3.0	19.0	16.5
Seattle, Wash.	14.0	1.0	17.0	16 5
Tacoma	14.0	1.0	17.0	16.5
Phoenix, Ariz.	18.5	3.0	21.5	21.5
Honolulu, H.	13.5	..	16.5	17.5
Juneau, Alaska	14.5	..	17.5	18.0

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline Tank wagon	Incids tax	Service of station	Kero. Tank wagon
Omaha	14.25	..	16.25	11.75
Crawford	15.0	..	....	13.0
McCook	15.75	..	17.75	13.75
Norfolk	14.75	..	16.75	12.5
North Platte	15.75	..	17.75	13.75
Scotts Bluff	15.25	..	17.25	13.0

TANK WAGON CHANGES

Effective September 27, Standard Oil Co. of Indiana reduced gasoline tank wagon and service station prices 2 cents at Detroit, Mich.

Effective September 28, Atlantic Refining Co. reduced gasoline tank wagon and service station prices 1 cent in Pennsylvania and Delaware.

Effective October 1, Standard Oil Co. of California advanced gasoline tank wagon and service station prices 2 cents in California to cover 2-cent gasoline tax which became effective that date. Standard Oil Co., Kentucky, advanced gasoline tank wagon and service station prices 2 cents in Georgia to cover advance in gasoline tax from 1 to 3 cents.

Prairie Pipe Line Deliveries Cut 50 Per Cent in One Year

The Prairie Pipe Line Co.'s shipments of crude from the Mid-Continent Field in the month of September were 2,874,692.51 bbls., a daily average of 95,823 bbls. The shipments in August were 114,094 bbls. per day, which up to that time was the lowest record of deliveries to refiners the company had made in years. In September, 1922, the Prairie shipped 190,705 bbls. per day or about double the quantity of crude shipped in the month just past.

Henry Ford Wires Oil and Gas Journal Not Going Into Oil

Detroit, Mich., Sept. 28, 1923.
The Oil and Gas Journal,
Tulsa, Okla.

Answering your telegram twenty-fourth, no truth to report mentioned.—C. A. Zahnow, Office of Henry Ford.

This direct and explicit reply from Henry Ford to an inquiry wired to him by The Oil and Gas Journal disposes of the rumors recently revived and widely circulated regarding his proposed entrance into the oil business.

The Oil and Gas Journal telegraphed to Mr. Ford September 24 asking him for an official statement, explaining that the Journal's news policy was to get its information from headquarters and did not wish to publish rumors. Mr. Ford happened to be in Montreal, which accounts for the delay.

His denial covers not only the reports which proposed to put him into the producing and refining of oil with the 5,000 Ford agencies as filling stations, but it also disposes of the rumor circulated on Wall Street that "an independent oil group is said to have made a proposition to Henry Ford for the marketing of gasoline and lubricating oil at Ford service stations, on long term contracts with prices on sliding scales, yielding the Ford Co. one cent a gallon profit." Mr. Ford's answer to The Oil and Gas Journal shows that if any such proposition was made to him he has no intention of accepting it, or of entering the oil business.

GEOLOGISTS TO HOUSTON, 1924

The meeting of the American Association of Petroleum Geologists scheduled for March, 1924, will be held at Houston, Tex., which place was decided upon at the recent session at Los Angeles.

Lyman Stewart Dies; Pioneer on the Pacific; Founded Union Oil Co.

LOS ANGELES, Calif., Sept. 28.—Lyman, Stewart, pioneer in the California oil industry, founder of the Unior Oil Co., and chairman of its board, died at his home here today following an attack of acute bronchitis and complications. He had been in indifferent health for some time and had seemed to be recovering.

Born in Cherrytown, near Titusville, Pa., July 22, 1840, young Stewart quit school at 11, worked eight years in his father's tannery and saved the money for his first investment in oil in 1859, three years, his friends used to point out, before John D. Rockefeller entered the commission business. Mr. Stewart's initial venture was a one-eighth interest

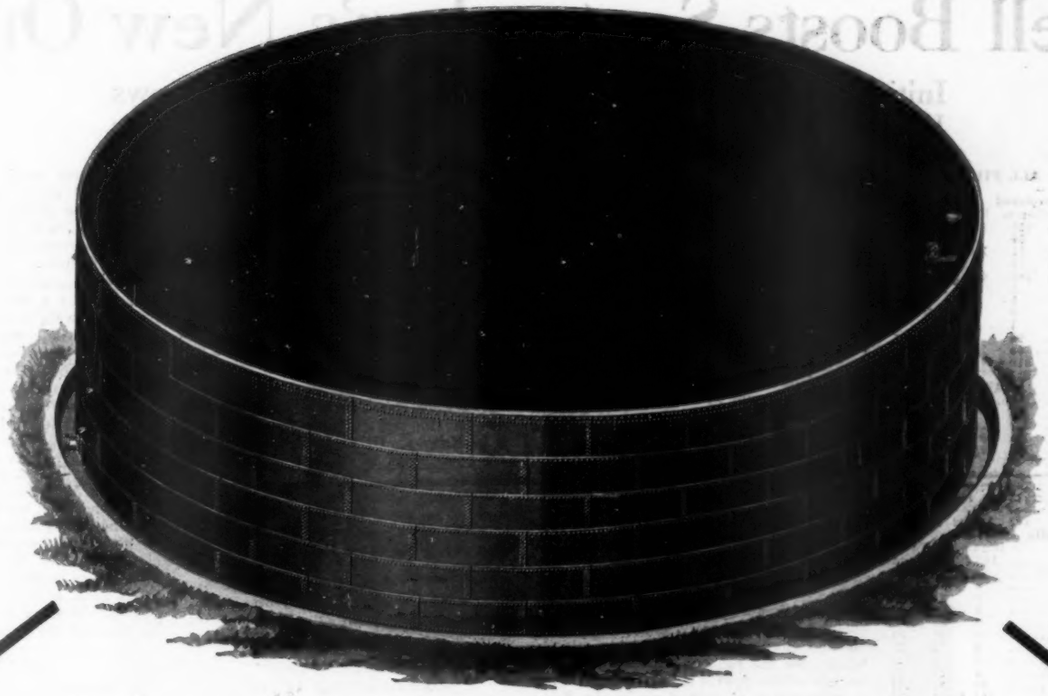
Lyman Stewart

in a 5-acre lease on Oil Creek, the Benning farm, which became one of the most prolific producers in that section. His one-eighth cost him $125. They sublet the lease but no drilling was done then. A year later he and a partner struck oil in a well near Petroleum Center but the market had dropped and the well was shut in and left standing.

"The Pithole Field was discovered while I was in the army," Mr. Stewart related in an interview published in The Oil and Gas Journal last May 31, "and had about reached its zenith when I returned to the oil country. I began taking one sixty-fourths interests, then one thirty-seconds, and finally one-eighth and one-fourth shares. In 1868 my brother and I went in with Frank W. Andrews on a five-eighths interest in 112 acres. In four years we took 1,750,000 bbls. of oil from 24 wells on 30 acres of proven territory."

In 1882 Mr. Stewart accepted a proposition from I. E. Blake, a director in the Pacific Coast Oil Co., the only concern then operating there. Mr. Stewart and W. L. Hardison formed a partnership and began drilling on Santa Paula Creek. The first seven holes were dry and cost the partners $135,000. I. W. Hellman, a Los Angeles banker, lent them $10,000, saving the partnership from ruin and starting Mr. Stewart on the way to the success that culminated in the $100,000,000 Union Oil Co. of California.

Two other achievements in Mr. Stewart's three score years in the oil industry stand out. He is credited with building the first refinery in California and with being the first to construct a tank vessel on the Pacific.



Standard 55—"United" Water Seal Top Tank

"UNITED"
WATER TOP TANKS

For Storing
High Gravity Oil, Gasoline, and Other Valuable Liquids

"United Water Seal Top Tanks have a flat roof of steel plate, tight riveted and caulked water tight. The roof is located about seven inches below the top of the last ring of tank shell and is carried on steel framing properly designed to carry the load intended. The space between the top of tank rings and roof is filled with water, which can be kept circulating, thus keeping the tank and its contents cooled. Not only is the escape of rising vapors impossible—but the vapors coming in contact with the cool roof condense back to a liquid. And, "United" Water Seal Top Tanks reduce fire hazards—if not eliminating them entirely.

Send for Special Bulletin

Will be glad to send you complete information and free Bulletins describing this Water Seal Top Tank upon request. Write today.

UNITED IRON WORKS, INC.

SALES OFFICE TULSA

Kansas City, Mo.

SALES OFFICE DALLAS

"When Better Constructed Tankage is Offered it Will Be 'United Design'"

"UNITED" IRON WORKS INC. UNITED FOR SERVICE

"UNITED" IRON WORKS INC. UNITED FOR SERVICE

N. M.	18.0	1.0	20.0	15.5	Scotts Bluff ..	15.25	..	17.25	13.0	at the recent session at Los Angeles.		tank vessel on the Pacific.

Powell Boosts September's New Output

Initial Production in Other Fields Except Wyoming Shows Decrease. Material Drop in Completions and New Work

SUMMARIES OF ALL FIELDS

Wells Completed

Field—	Comp.	Prod.	Dry	Gas
Eastern	338	1,330	44	61
Central Ohio	56	231	20	23
Lima	71	1,416	3	2
Indiana	15	518	3	1
Kentucky	148	4,185	3	11
Tennessee	1	0	1	0
Mississippi	1	0	1	0
Alabama	0	0	0	0
Georgia	1	0	1	0
Illinois	16	194	9	2
Kansas	95	1,544	45	5
Oklahoma	420	68,201	151	46
North Central Texas	122	7,784	51	6
East Central Texas	127	331,020	4	0
Gulf Coast	101	38,564	32	6
North Louisiana	35	810	11	13
Arkansas	139	30,325	27	1
Wyoming	63	20,835	1	0
Montana	34	2,623	9	0
Utah	0	0	0	0
Total Sept.	1,783	509,586	416	182
Total Aug.	2,225	436,454	608	213
Difference	442	73,132	192	31

Rigs and Wells Drilling

Field—	Rigs	Drg.	Total
Eastern	162	380	542
Central Ohio	54	107	161
Lima	4	81	85
Indiana	1	34	35
Kentucky	1	265	266
Tennessee	0	21	21
Mississippi	0	19	19
Alabama	0	13	13
Georgia	0	2	2
Illinois	4	21	25
Kansas	48	131	179
Oklahoma	223	1,007	1,230
North Central Texas	51	218	269
East Central Texas	54	255	309
Gulf Coast	101	253	354
North Louisiana	24	79	103
Arkansas	88	149	237
Wyoming	110	417	527
Montana	24	192	216
Utah	0	24	24
Total Sept.	949	3,668	4,617
Total Aug.	1,062	3,935	4,997
Difference	113	267	380

The Powell Field in East Central Texas was the outstanding feature of oil field development east of California during the month of September. New production from 127 wells completed in the field totaled 331,020 bbls. as compared to a production of 203,724 bbls. of new production in August, a gain of 127,296 bbls. This enormous gain at Powell resulted in an increase in new production in September as compared to August of 73,132 bbls., most of the other fields showing decreases. Wyoming, however, showed an increase in initial production of 6,304 bbls. Oklahoma registered a decline in new production of 15,320 bbls., the Gulf Coast, a drop of 14,959 bbls. and Arkansas a decrease of 22,665 bbls.

There was a substantial falling off in the number of wells completed in September as compared to August, the decrease amounting to 442, while there also was a material decline in new work, there being 113 less rigs in September, and 267 less drilling wells.

OKLAHOMA

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Washington	2	10	1	0
Nowata-Rogers	8	20	7	0
Osage	48	6,597	18	2
Tulsa	16	61	6	4
Okmulgee	28	690	16	2
Okfuskee, Hughes, Seminole and McIntosh	41	8,170	17	7
Muskogee-Wagoner	8	40	4	1
Creek	57	14,014	27	5
Pawnee	14	712	6	2
Payne	2	20	1	0
Kay	55	21,862	9	4
Garfield-Noble	19	5,130	5	1
Carter	33	4,377	4	2
Stephens-Cotton	25	268	12	6
Miscellaneous	44	3,180	18	11
Total Sept.	420	68,201	151	46
Total Aug.	563	83,521	199	45
Difference	143	15,320	48	1

Summary of New Operations

County—	Rigs	Drg.	Total
Washington	0	3	3
Nowata-Rogers	0	3	3
Osage	37	157	194
Tulsa	3	17	20
Okmulgee	22	60	82
Okfuskee, Hughes, Seminole and McIntosh	25	89	114
Muskogee-Wagoner	3	12	15
Creek	31	116	147
Pawnee	0	9	9
Payne	0	3	3
Kay	12	102	114
Garfield-Noble	41	114	155
Carter	13	107	120
Stephens-Cotton	3	33	36
Miscellaneous	33	183	216
Total Sept.	223	1,007	1,230
Total Aug.	343	1,133	1,376
Difference	20	126	146

Oklahoma producers portrayed the general sentiment of oil men in the Mid-Continent during September, when a sharp drop in the number of completed wells and amount of new production was recorded. The decline was not so severe as that registered in August, but it served to show the results of the curtailment program and underlying conditions. During the month the number of completions in the State dropped from 563 to 420, while the amount of new production slumped from 83,521 bbls. to 68,201 bbls. Dry holes were less numerous, slumping from 199 to 151, and gas wells grew from 45 to 46 during the month.

Serious reductions in the number of completions in Osage County, Kay and Noble Counties were responsible almost wholly for the changes shown in a comparison of the figures for the two months. A curtailment of operations in the Burbank Field, including the northwest extension into Kay County and the slipping production in the Tonkawa Field of Kay and Noble Counties, may be pointed out as the most outstanding reasons for the decline.

During August Osage County showed an output of 20,992 bbls. new production from 102 completed wells while it showed only 6,597 bbls. new oil from 48 completions in September. Kay County dropped from 26,484 bbls. new oil from 59 new wells to 21,862 bbls. from 55 new wells. Garfield-Noble Counties slumped from 21,195 bbls. from 61 completions to 8,180 bbls. from 39 completions, while with few exceptions other districts showed little change.

The most astonishing increase was made in Seminole County due to the new Wewoka Field. For September this district showed 8,170 bbls. new production with 41 new wells, compared to 2,035 bbls. new oil from 35 new wells during the month before. Carter County made a slight increase as did also the miscellaneous areas.

All sections of the State held close to the former figure for new work or showed slight slumps in operations except the Seminole County region. In September there were 223 rigs and 1,007 wells drilling, a majority of which were shut down, making a total of 1,230 operations. In August there were 243 rigs and 1,133 wells drilling, a total of 1,376 operations, or a decrease of 146 operations in the month.

KANSAS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Butler	20	372	10	1
Chautauqua-Elk	5	23	3	0
Marion	1	0	1	0
Greenwood-Woodson	33	693	16	0
Montgomery-Wilson	3	10	1	0
Neosho-Allen	3	1	2	0
Miami-Franklin-Anderson	7	165	4	0
Miscellaneous	13	275	8	4
Total Sept.	95	1,544	45	5
Total Aug.	141	2,786	67	3
Difference	46	1,242	22	2

Summary of New Operations

County—	Rigs	Drg.	Total
Butler	6	19	25
Chautauqua-Elk	0	2	2
Marion	3	1	4
Greenwood-Woodson	27	40	67
Montgomery-Wilson	1	2	3
Neosho-Allen	0	3	3
Miami-Franklin-Anderson	1	4	5
Miscellaneous	10	60	70
Total Sept.	48	131	179
Total Aug.	52	154	206
Difference	4	23	27

Kansas producers continued to shut down wells on top of the sand during September, with the result that new production struck a new low point. Completions during the past month numbered 95, a 50 per cent reduction from the figure for August, when 141 wells were finished. New production slumped from 2,786 bbls. in August to 1,544 bbls. in September; dry holes dropped from 67 to 45, and 3 gas wells were completed in August, while 5 were finished in September.

Greenwood County was largely responsible for the serious curtailment of new oil in Kansas. Other sections, however, have contributed to the lack of new production.

New operations continued to show a tendency to slump further. During September there were 48 rigs and 131 drilling wells in the State, a total of 179 operations, with a vast majority of the drilling wells shut down. In August there were 52 rigs and 154 drilling wells, a total of 206 operations. Comparison of the figures shows a drop of 27 operations during the month.

NORTH CENTRAL TEXAS

Summary of Completions

District—	Comp.	Prod.	Dry	Gas
Wichita	21	214	14	0
Burkburnett	9	545	4	0
Eastland	11	230	5	2
Stephens	4	940	1	3
Young	3	73	1	0
Archer	50	4,464	17	0
Wildcats	24	1,318	9	1
Total Sept.	122	7,784	51	6
Total Aug.	254	11,400	114	12
Difference	132	3,616	63	6

Summary of New Work

District—	Rigs	Drg.	Total
Wichita	8	24	32
Burkburnett	3	14	17
Eastland	6	22	28
Stephens	10	19	29
Young	2	19	21
Archer	11	49	60
Wildcats	11	71	82
Total Sept.	51	218	269
Total Aug.	59	214	273
Difference	8	4	4

There was a decrease of 132 completions in the North Texas Field in September, compared with August, and a decrease of 3,616 bbls. in production. There were 63 less dry holes and just half the number of gas wells reported in August.

The total of new operations was almost the same, but 4 less than in August, 8 less rigs and 4 more drilling.

EAST CENTRAL TEXAS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Limestone	0	0	0	0	2	22	24
Navarro	127	331,030	4	0	41	165	206
Misel.	0	0	0	0	11	68	79
Ttl. Sept.	127	331,020	4	0	54	255	309
Ttl. Aug.	75	203,724	6	0	80	241	321
Difference	52	127,296	2	0	26	14	12

In the matter of initial production the Powell Field in Navarro County, Texas, surpassed all records in American oil fields in September. A total of 127 completed wells brought in 331,030 bbls. of first day production, all, in fact, that was credited to the entire East Central Texas area. This was an increase of 52 completions and 127,296 bbls. in initial production over the record for August.

As has been said before in monthly reviews of operations in this area, initial production does not mean much in the Powell Field as most of the wells soon fall off and a goodly proportion of them quit flowing altogether within a month's time.

The Powell area, in Navarro County, was extended to the southwest by several completions of the field and is at this writing a "shoestring" a little more than 6 miles long with no way of telling how much farther it will extend. The two dry holes which were believed two months ago to surely mark the southern limit of the field are a mile apart and the trend of the field is about midway between them, with a good chance of extending beyond the line between the brace of dusters.

Drilling operations have fallen off from the record of a month ago, but at that time many wells were shut down for lack of water. These were completed in September and there were so many of them brought in about the same time that new work could not keep pace with completions. However, after the report was closed it was learned that no less than a dozen wells in the northeastern end of the field have been abandoned, some of them below sand depth and others all the way from 500 feet to 2,800 feet, because their owners did not consider them worth finishing. This dozen wells are carried in the September report as drilling wells. There were 54 rigs up and 255 wells classified as drilling in the East Central Texas area, a total of 309, or 26 fewer rigs and 14 more drilling wells than at the close of the August report.

GULF COAST

Summary of Field Operations

District—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Batson	6	55	1	0	1	2	3
Barber Hill	3	300	2	0	0	4	4
Blue Ridge	0	0	0	0	1	1	2
Big Creek	2	800	1	0	1	2	3
Damon Md.	2	0	2	0	1	3	4
Goose Creek	5	510	3	0	0	10	10
Humble	4	60	2	1	0	4	4
Hull	8	5,700	1	1	4	19	23
Jennings	1	0	1	0	0	2	2
Markham	0	0	0	0	0	2	2
Orange	15	9,850	5	1	3	13	16
P. Junct.	1	0	1	0	0	3	3
Spindletop	1	30	0	0	0	1	1
Saratoga	1	10	0	0	0	1	1
Sour Lake	3	300	1	0	4	3	7
Somerset	5	34	0	0	4	4	8
Vinton	3	100	1	0	0	6	6
W. Columbia	1	1,600	0	0	0	5	5
Laredo	8	825	0	0	2	11	13
Luling	18	18,300	2	0	5	15	20
Milam Co.	3	40	0	2	0	6	6
Misel.	12	50	9	1	75	136	211
Ttl. Sept.	101	38,564	32	6	101	253	354
Ttl. Aug.	143	53,523	45	2	111	286	397
Difference	42	14,959	13	4	10	33	43

New production in the Gulf Coast and Southwest districts decreased 14,959 bbls. during September from the August record, falling to 38,564 bbls. A decline of 42 is noted in the number of wells completed and the dry holes and salt water wells number 32, compared with 45 last month.

Rigs standing at the close of September total 101, compared with 111 at the same period in August. A decrease of 33 is shown in drilling wells.

The monthly summary reflects the effects of the drastic curtailment orders to the larger operators as they effect the the Gulf Coast region. Deducting the Laredo, Luling, Somerset and Milam County districts from the totals, cuts down the new production in the Coastal Pools alone to 19,365 bbls. compared with 34,498 bbls. last month. The initial production in the districts named totals 19,199 bbls. compared with 17,025 bbls. during August.

Completions in the Coastal districts alone during August aggregated 102, against 67 during September.

Approximately 65 per cent of the total new production in the Coastal districts came from old wells that either had been worked over or drilled deeper to lower sands.

NORTH LOUISIANA AND SOUTH ARKANSAS

Summary of Field Operations

Districts—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Smackover District, Union Co.	85	26,650	15	0	40	80	120
Ouachita Co.	18	2,750	2	0	14	25	39
Stephens Dist. Columbia and Ouachita Counties	25	825	1	0	18	21	39

(Continued on Page 202)

It Is Easy to Take Down An Ajax Engine

AJAX ENGINES

All the nuts that hold the cylinder to the frame are accessible from the outside. Notice, in the view of the engine shown above, that the lower studs have been put into the frame instead of the cylinder.

Notice also the adjustable cross-head on the pump, which is so arranged that it can be fitted to any drilling engine.

Genuine Ajax Engines and parts are

Distributed by
NATIONAL SUPPLY COMPANIES
in every field

Manufactured by
AJAX IRON WORKS
Corry, Pa.

AJAX DRILLING ENGINES

THE WELL BLEW IN—

They lost the derrick and nearly Pipe remained to tell the story—

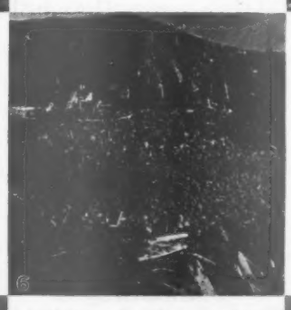
Another story from the Drilling Field—
another demonstration of the particularly
good qualities of "NATIONAL" Pipe;
as reported in 12 chapters.

Alexander No. 1 Well
Santa Fe Springs Field
California
Jan. 5, 1922

Chapter I
"View of crater two days after the well blew in. The entire equipment, including the derrick, was lost in the hole."

Chapter II
"Looking directly into the crater. The whole mass resembled a heaving lake of lava, the movement throwing considerable mud into the air."

Chapter V
"View of crater showing the mass of oily mud during one of its receding or sinking movements."



Chapter VI
"Another view of the crater looking towards the engine house. Note the two mud sills. These sills were later submerged."

Chapter IX
"The man in the picture is standing on a twisted mass of the "NATIONAL" Drill Pipe. The boiler stacks help to give an idea of the distance the pipe was thrown."

Chapter X
"A twisted mass of pipe. The most remarkable feature of the whole thing being the fact that the 700 feet of "NATIONAL" Drill Pipe thrown from the hole, remained in one length."

—THE PIPE BLEW OUT

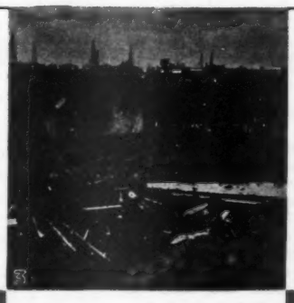
the whole works - but part of the It was "NATIONAL"

As a continuation of this unusual story and example of drill pipe dependability, ask for "NATIONAL" Bulletin No. 15—"NATIONAL" PIPE FOR DRILLING PURPOSES.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.

District Sales Offices in The Larger Cities

Chapter III
"The mass seemed to whirl around and around, forming a cone shaped depression which moved to different parts of the lake."



Chapter IV
"The eruptions were of different volume and intensity. It was observed that they were directly controlled, and worked with the rise and fall of ocean tides."

Chapter VII
"At the time the well blew in they were coming out of the hole, and 700 ft. of "NATIONAL" 6-inch Drill Pipe was thrown into the field. The bit end of the pipe laid the farthest from the crater, being some 150 yards."

Chapter VIII
"Looking from the fields towards the crater. Note the drill pipe lying in one continuous length like a snake among the cabbage plants."

Chapter XI
"Looking from the field towards the crater. This shows the terrific twisting the pipe withstood without any sign of failure in wall or weld."

Chapter XII
"Showing the bit end of the pipe, the bit sunken in the ground. Seven hundred feet of pipe was thrown from the hole, suspended for a moment in the air and heaved into the field, bit first."

Oklahoma Field Operations

By Ralph T. Baker

Production at Burbank and Tonkawa continues to drop. Wewoka Pool outstanding feature with 14,550 bbls. daily production. New work continues to decline. Wildcatters active in all sections of State. Dutcher sand wells northwest of Bristow revived by agitating and make big flows.

TULSA, Okla., Oct. 2.—With production in the Burbank and Tonkawa Fields continuing to lead the decline which has been general throughout the State, the development of the Wewoka Field in Seminole County has been the most outstanding feature of production news in Oklahoma reecntly. Few pools have shown the initial promise of this area. To date there are nine wells producing from the Smith or 3,100-foot sand and an additional well has made considerable oil from the 1,850-foot level. Production from these wells has held steady between 14,000 and 15,000 bbls. for several days.

No definite gauge has been taken on the Magnolia Petroleum Co. & Ramsey's No. 1 Parker, NE cor. SE NW, Section 32-8-8, the most recent producer. Five million feet of gas and a show of oil was passed up in sand at 3,100-20 feet and the real pay was tapped at 3,175-76 feet, the well flowing 13 bbls. an hour with 3,000,000 feet of gas. Many rumors concerning the size of the well were afloat during the time it was held at this figure while constructing tankage. The pay is considered to be the Smith sand.

Ossenbeck and others' No. 1 Davis, C SW NE, Section 10-8-7, was drilling ahead at 3,300 feet after passing oil which filled the hole 2,300 feet from sand at 3,245-51 feet, and swabbed 90 bbls. in one day. The Independent Oil & Gas Co. and the Atlantic Oil Producing Co.'s No. 1 Long, NE cor. SW NE, Section 32-8-8, was not aided by deeper drilling, having passed sand from which it had been producing at 3,134-55 feet and drilling below 3,261 feet without beneficial results.

R. H. Smith's No. 1 Parker, NE cor. SW, Section 32-8-8, good for 50 bbls. initial production at 1,849-57 feet, increased its flow to about 100 bbls., drilling itself in.

Wewoka Production

Production from the three completed wells on the Foster lease of the Producers & Refiners Corp. made approximately 6,000 bbls. last week. The three producers of R. H. Smith in the Smith sand made about 7,000 bbls. with an additional 100 bbls. from his No. 1 Parker, NE cor. SW, Section 32-8-8, producing from the shallower sand. The two wells of the Independent Oil & Gas Co. and others have been making about 1,200 bbls. daily average and the Magnolia Petroleum Co. & Ramsey well can be counted good for 250 bbls. as it stands. The total of 14,550 bbls. daily average output may be taken as a close approximation. Much of the output is being run into earthen storage and deeper drilling is being practiced periodically with the result that production changes overnight.

Several wells are near the sand. The Producers & Refiners Corp.'s No. 1 Long, SE cor. SW NE, Section 32-8-8, has been shut down on top of the sand, awaiting completion of storage before drilling in. The Independent Oil & Gas Co.'s No. 1 Walker, SE cor. Section 29-8-8, was drilling at 2,935 feet. The same company's No. 1 Foster, NW cor. NE SW NW, Section 33-8-8, was fishing at 3,010 feet after getting a big gas flow just above this depth. The Magnolia Petroleum Co.'s No. 1 Parker, NW cor. SE NW, Section 33-8-8, was drilling at 3,002 feet. Other wells were working at shallower levels.

The Producers & Refiners Corp. has been handling about 3,600 bbls. daily through its 4-inch line to the Tulsa refinery. It has been shipping about 2,000 bbls. daily additional by tank car from Holdenville and has about 20,000 bbls. in steel storage and more in earthen storage. R. H. Smith is filling his first 55,000-bbl. storage tank and is constructing another. He has been shipping from Wewoka by tank car and has considerable oil in earthen storage also.

North of Wewoka, Jarvis & Holm's No. 1 Harjo, NE cor. SE, Section 21-10-8, had a hole full of oil from sand topped at 3,484 feet. It made several good flows and was drilled in 6 feet without any material change. Wm. McDougall's No. 1 Dindy, C SW SW, Section 20-6-7, got a showing for gas at 1,120 feet.

In Hughes County, the Papoose Oil Co.'s No. 1 Simons, SE cor. SW, Section 4-9-9, was making about 300 bbls. from sand at 3,315-16½ feet, with tools stuck in the hole.

New Work Drops

New work in the State continued to drop. During the week ended September 22 there were 62 locations staked, 218 rigs, 518 wells drilling and 562 wells shut down, a total of 1,360 operations. For the week ended September 15, there were 60 locations, 216 rigs, 558 wells drilling and 538 wells shut down, a total of 1,372 operations. It is seen that the number of wells shut down now definitely outnumbers those actively in operation. There was little change in any district with the exception of the Lawton-Duncan area where an increase of eight operation was made, bringing the total from 128 to 136.

Burbank and Tonkawa production continued to drop, the reduction being modified during the past week, however. The Burbank Field slumped from an output of 101,525 bbls. from 1,097 wells to 99,416 bbls. from 1,100 wells, a decrease of 2,109 bbls. with 3 new wells during the week. The Tonkawa Field dronped from 58,614 bbls. from 520 wells to 55,649 bbls. from 534 wells, a decrease of 2,965 bbls. with 14 new wells.

The Kay County Gas Co. was increasing its connections in the Tonkawa Field and was rushing wildcat wells in an attempt to agument rapidly failing production. The Marland Companies see the necessity for more crude to keep the Ponca City refinery in operation and make the necessary crude deliveries under contract to other companies. The Kay County Gas Co. has taken the oil formerly run by the Globe Refining Co. from the Blackwell Oil & Gas Co. properties at Tonkawa, and during the past week this company started running 4,000 bbls. daily from a Gypsy lease. The Sinclair Pipe Line Co.'s stations at Tonkawa and Covington have been shut down.

Pipe lines at Tonkawa are running practically all oil produced. On September 20 there were 674,569 bbls. in storage in the field with 898,088 bbls. additional room. Deeper drilling was the feature of the past week in this field, many wells being carried from the Upper Hoover to the Lower Hoover sand and from the Lower Hoover to the Carmichael sand. The pressure seemed to be definitely off the entire field as new completions were even smaller than anticipated. Two hundred of the 530 wells of the field are now on the pump and there is little new activity in the immediate vicinity of the center of the pool.

The Amerada Petroleum Corp.'s No. 1 Sipe, C SW NE, Section 36-25-1w, a mile northeast of production, which made two small flows and stood with a hole full of oil from sand at 1,861-78 feet, was estimated good for 50 bbls. on the pump after a 10-quart shot. It was flowing 35 bbls. daily. Geologists declare a new "high" is found at this point and several good locations may be made. Renewed drilling activity may extend to the head of the Salt Fork in this direction.

In the vicinity of Blackwell, Otstot and others' No. 1 Skelton, NW cor. Section 15-27-1w, was declared dead after considerable efforts to make a producer of it. A showing was recorded at 3,390-92 feet and it made 272 bbls. in 24 hours at 3,447-52 feet. The same operators' No. 1 Barr, NE cor. SW NE, Section 16-27-1w, which started at the rate of 150 bbls. an hour several days ago, was making about 500 bbls. of which 8 per cent was water and b. s.

In Pawnee County, the Duquesne Petroleum Co.'s No. 1 Colclazier, SW cor. NE SW, Section 8-21-6, was ready to drill out cement in a few days after working over this wildcat, which started with a flow of 605 bbls. from sand topped at 2,985 feet.

In Payne County, Neely & McGill passed up a 17-bbl. flow from sand topped at 3,381 feet in No. 1 Powers, SE cor. NE, Section 27-18-6. Drilling was under way at 3,405 feet. Mullendore and others' No. 1 Riley, NW cor. NE SW, Section 24-19-4, was good for 20 bbls. after a 20-quart shot in the sand from 3,695-3,705 feet. Oil was 40.5 gravity. The Oklahoma Producing & Refining Corp.'s No. 1 Wier, SW cor. NW NE, Section 8-18-4, was pumping 5 bbls. and some water after plugging back to Bartlesville sand at 3,633-73 feet from 4,177 feet.

In Lincoln County, the Union Petroleum & Supply Co. and others' No. 1 Jackson, SE cor. Section 2-14-6, was holding up to an output of 424 bbls. of 41.8 gravity oil from sand at 4,082-83 feet. It was reported the Magnolia Petroleum Co. had connected to the well with a 2-inch line and was buying 50 per cent of the oil and storing 50 per cent.

Burbank Quiet

The Burbank Field remained quiet. Storage was rapidly nearing the 10,000,000-bbl. figure. Total on September 21 showed 9,319,254 bbls. in storage with 1,744,205 bbls. room. The Ozark Pipe Line Co. started running oil from the Burbank Field recently, shipping about 1,600 bbls. daily from the Thompson and Barnum leases of the Comar Oil Co. to its Tonkawa pump station.

George S. Boles' No. 1 Gaston, SE cor. NW, Section 4-27-5, northwest extension, was drilled 8 feet deeper to a total depth of 2,911 feet and showed an increase of 498 bbls. to 988 bbls. Peters & Oliphant's No. 1, SW cor. NW, Section 17-27-6, extended the field one-half mile northeast when pay sand was found at 2,976-84 feet and the hole filled 1,500 feet with oil. The Producers & Refiners Corp.'s No. 12, C NE SW NE, Section 16-26-6, was good for 100 bbls. after shooting sand from 2,939-46 feet with 10 quarts. The Sinclair Oil & Gas Co.'s No. 16, CNL NW NW NE, Section 19-27-6, made 125 bbls. in 17 hours after a 150-quart shot at 2,904-65 feet. The Sinclair Oil & Gas Co.'s No. 16, CEL SE NE SW, Section 20-27-6, had 600 feet of oil in the hole from sand at 2,905-59 feet. The Comar Oil Co.'s No. 7, CNL NE NW NE, Section 2-26-5, made 97 bbls. after a 30-quart shot in sand at 2,916-57 feet, and No. 6 Thompson, NW cor. SW, Section 15-27-5, was making 60 bbls. oil and 50 bbls. water at 2,960-72 feet.

Burbank Production

Daily average production of the Burbank Field for the week ended September 26 was as follows:

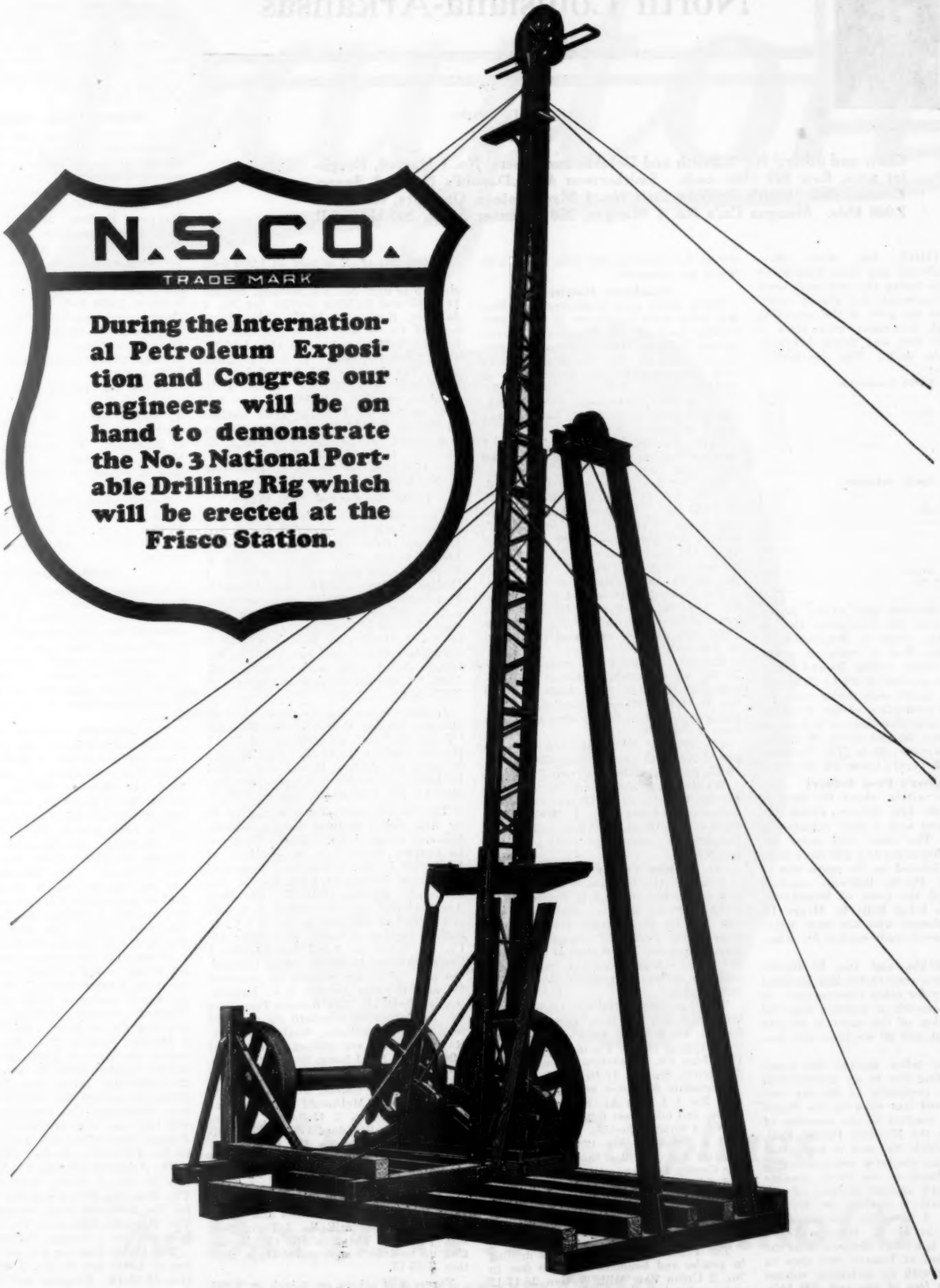
Osage County	No. Wells	Output Bbls.
Carter Oil Co.	164	10,557
Comar Oil Co.	7	312
Cosden Oil & Gas Co.	68	2,230
Devonian Oil Co.	16	299
Gardner Petroleum Co.	20	998
Gypsy Oil Co.	165	17,485
Kewanee Oil & Gas Co.	12	267
Laurel Oil & Gas Co.	16	544
Lorraine Petroleum Co.	14	391
Midland Oil Co.	5	154
Waite Phillips Co.	20	4,918
Phillips & Delmar Oil Co.	1	2,324
Phillips Petroleum Co.	12	2,368
Phillips Petr. & Skelly Oil	142	9,537
Prairie Oil & Gas Co.	90	2,543
Producers & Refiners Corp.	28	1,011
Roxana Petroleum Corp.	57	1,137
Simons, Moore and others	29	845
Sinclair Oil & Gas Co.	129	6,826
Skelly Oil Co.	5	2,156
Tidal Osage Oil Co.	41	1,215
Twin State Oil Co.	7	310
Total	1,048	68,227
Kay County—		
Geo. S. Boles	1	859
Carter Oil Co.	3	3,969
Comar Oil Co.	6	4,471
Cosden O. & G. Co.	2	2,448
Gypsy Oil Co.	4	1,271
Laurel O. & G. Co.	1	20
Phillips Pet. Co.	5	5,241
Waite Phillips Co.	4	3,980
Pure Oil Co.	2	807
Roxana Pet. Corp.	1	896
Sapulpa Ref. Co.	5	1,350
Skelly-Phillips Cos.	12	2,828
Sinclair O. & G. Co.	1	182
Twin State Oil Co.	5	2,867
Total	52	31,189
Total Burbank	1,100	99,416
Total last week	1,097	101,525
Difference	3	2,109

Daily average runs during the week were approximately 50,250 bbls. divided as follows: Gulf Pipe Line Co., 4,490 bbls.; Cosden Pipe Line Co., 1,833 bbls.; Kay County Gas Co., 7,612 bbls.; Osage Pipe Line Co., 2,154 bbls.; Oklahoma Pipe Line Co., 15,154 bbls.; Prairie Pipe Line Co., 7,420 bbls.; Sinclair Pipe Line Co., 5,130 bbls.; Moore Refining Co., 1,792 bbls.; Empire Pipe Line Co., 1,565 bbls.; Magnolia Petroleum Co., 1,500 bbls.; Ozark Pipe Line Co., 1,600 bbls. Storage was as follows: Standish Pipe Line Co., 12,785 bbls.; Gypsy Oil Co., 15,174 bbls.; Waite Phillips Co., 7,712 bbls.; Sinclair Oil & Gas Co., 3,075 bbls.; Sapulpa Refining Co., 950 bbls.; Twin State Oil Co., 1,425 bbls.; Cosden Oil & Gas Co., 4,367 bbls.; Devonian Oil Co., 187 bbls.; Boles, 609 bbls.; and Delmar-Phillips Cos., 2,324 bbls.

Creek County Work

Creek County was enlivened the past week by the rejuvenation of the Cortez Oil Co.'s No. 1 Cain, SE cor. NW, Section 22-16-8, which went dead during the week after making 2,900 bbls. daily from Dutcher sand. After agitation and a few hours of work production was again secured in this well and it gauged 5,041 bbls. the first 24 hours. Four days later it was making 3,600 bbls. daily. The Gypsy Oil Co.'s No. 1 Cain, NW cor. NE, same section, which also

(Continued on Page 204)


N.S.CO.
TRADE MARK
During the International Petroleum Exposition and Congress our engineers will be on hand to demonstrate the No. 3 National Portable Drilling Rig which will be erected at the Frisco Station.

THE NATIONAL SUPPLY COMPANIES

North Louisiana-Arkansas

By M. L. Vaughn

Chew and others' No. 1 Smith and Delukie and others' No. 1 Harrell, Norphlet area, flow 600 bbls. each. Smitherman & McDonald's No. B-2 Saxon, Louann, 300. Smith Refining Co.'s No. 1 Myar Estate, Ouachita, estimated 2,000 bbls. Mangus Co.'s No. 1 Mangus, 250; Pioneer State, 200-bbl. well.

SHREVEPORT, La., Sept. 29.—Losses in Bellevue and light Smackover pipe line runs during the past week were principally responsible for almost exactly wiping out the gain of the preceding week. North Louisiana runs show a drop of 1,765 bbls. and South Arkansas of 2,310 bbls. daily. The distribution is as follows:

North Louisiana

Caddo, light	8,575
Caddo, heavy	2,465
De Soto-Red River	5,790
Elm Grove	1,290
Haynesville	25,270
Homer	9,815
Bellevue	6,250
Total	59,455

South Arkansas

El Dorado	11,530
Calion	7,575
Smackover, light	12,755
Smackover, heavy	95,435
Stephens	3,315
Total	130,610
Total both areas	190,065
Total last week	194,140
Decrease	4,075

New classification and prices posted by the Atlantic Oil Producing Co. on Stephens, Ark., crude on September 24, will have the effect of reducing prices 15 cents on crude testing 30 and above and 10 cents on that of 28 to 28.9 test. The Atlantic is the only major company handling the production of the Stephens area and the new classification and prices are as follows: 30 and above, 85 cents; 28 to 28.9, 80 cents; 26 to 27.9, 75 cents; 23 to 25.9, 65 cents; below 23, 50 cents.

Smackover's First Refinery

Completion within about 60 days is expected of the first refinery within the Smackover area with a daily capacity of 2,500 bbls. The plant will cover approximately five acres and will have three stills and is located on the north side of the Missouri Pacific Railway, one-half mile south of the town of Smackover. The plant is being built by Henry H. Cross, of Chicago, who has been active in the Smackover crude market for several months.

One 64,000-bbl. and two 55,000-bbl. tanks have been constructed and material is on the way for other construction. A considerable amount of building material for construction of the plant is already on the ground and 30 workmen are now employed.

Precautions taken against the possibility of setting fire to an uncontrolled well in close proximity to the big producer completed last week by the Smith Refining Co. resulted in the stopping of all trains on the Missouri Pacific Railroad, near which the well is located in order that train employes and passengers might be induced to use every possible effort to guard against ignition of the gas. The well is carried as W. W. Brown's No. 1 Townsite but is otherwise known as H. Z. Roger's No. 1 Murphy, and is a short distance from the railroad station at Louann and blew in at 2,000 feet with an estimated volume of 10,000,000 feet of gas and 200 bbls. of oil. The blowout was unexpected as it occurred at a shallower depth than gas had been previously encountered in this area and was complicated by loss of bit in the hole. Late reports from the well were to the effect that after being drilled deeper it is making 800 bbls. of oil with heavy gas pressure.

Smackover District

Eight fairly good producers and three dry holes were completed in the Union County area of the Smackover district during the past week. All of the producers were in the Norphlet vicinity with the exception of Smitherman & McDonald's No. B-2 Saxon, Section 32-15-16, in the Louann area, which is making 300 bbls. from 1,945 feet through 4-inch drill stem set on liner.

Chew and others completed No. 1 Smith, Section 17-16-15, flowing 600 bbls. from 2,040 feet.

The Del.-Ark. Production Co. abandoned No. 1 J. H. Alphin, Section 10-16-15 at 2,805 feet. Dulukie and others completed No. 1 Harrell, Section 17-16-15, flowing 600 bbls. from 2,080 feet. The Dunn Oil Co. brought in No. 1 Smith, Section 18-16-15, flowing 250 bbls. through 2½-inch tubing from 2,055 feet.

The Federal Petroleum Co. completed No. 1 Hicks, Section 20-16-15, flowing and making heads through 2½-inch from 2,065 feet with an estimated production of 200 bbls.

The Gulf Refining Co. completed No. 5 T. C. Goodwin, Section 16-16-15, pumping 150 bbls. from 2,060 feet and No. 6 Hardy Murphy, Section 3-16-15, pumping 150 bbls., 99 per cent salt water from 1,995 feet.

The Higgins Oil & Refining Co. completed No. 1 H. A. Murphy, Section 14-16-15, pumping 120 bbls. from 1,985 feet.

Walter Luck abandoned No. 1 Saxon, Section 9-16-16, at 2,112 feet and J. L. Nelson abandoned No. 1 McClanahan, Section 6-16-15, at 1,995 feet both having insufficient production to warrant pumping.

Union County Drilling

Although the increase in activity was not sufficiently marked to indicate anything startling the fact that there was any increase at all under present conditions seems worthy of comment. There was no increase in the total of operations but a considerable number were added and the number rigging up is decidedly encouraging.

The Amerada Petroleum Corp. has 6-inch stuck 300 feet from bottom at 1,865 feet in No. 4 Lyell, Section 3-16-15 and is arranging to set 4½-inch. The Ark. Pipe Line Co. set surface 10-inch in No. 3 Harrell, Section 17-16-15.

Barnsdale & Foster are rigging up to drill No. 1 J. Murphy, Section 17-16-15. Berfet and others set 6-inch at 2,095 feet in No. 1 Snyder, Section 2-19-15. Crawford & Sebastian set 12½-inch at 330 feet in No. 6 Giller, Section 14-16-15. The Crosby Trustees set surface 12½-inch and drilled to 700 feet in No. 2 Murphy, Section 15-16-15. Dickson and others are arranging to test 14 feet of sand at 2,070 feet in No. 1 Burton, Section 25-16-16.

The Federal Petroleum Co. is drilling in gumbo and boulders at 2,200 feet in No. 2 Union Saw Mill, Section 28-17-12 and set 6⅝-inch at 1,940 feet nd is fishing for bailer at 1,945 feet in No. W-5 Wells, Section 15-18-15. Garrett and others have derrick up for No. 1 Robinson, Section 23-18-14. The Gulf Refining Co. is waiting on standard rig for No. 2 G. E. Murphy, Section 8-16-15 with 600 feet of oil in hole, at 1,970 feet.

The Higgins Oil & Refining Co. is rigging up to drill No. A-2 Murphy, Section 14-16-15 and building derrick for No. 1 Jamison, Section 21-18-15. The Houston Oil Co. is waiting on standard rig for No. 1 McClanahan, Section 1-16-16, with 1,500 feet of oil in hole at 2,010 feet. The Humble Oil & Refining Co. set 6-inch at 1,840 feet in No. 1 B. Goodwin, Section 3-16-15 and has derrick up for No. 2 in the same section. In Section 7-16-15 it set surface 10-inch and drilled to 175 feet in No. 2 J. E. Lawton. In Section 32-15-16 it set surface 15½-inch and drilled to 1,000 feet in No. 1 Saxon.

Trying to Control Salt Water

The Imperial Oil & Gas Co. is trying to control salt water at 1,150 feet in No. 1 Central Bank, Section 12-17-15, with 1,600 feet salt water in hole. King & Timberlake are rigging up to drill No. 1 Hodges, Section 1-16-17. The Magnolia Petroleum Co. is rigging up to drill No. 2 Campbell, Section 13-16-17. In Section 17-17-14 it is drilling at 1,765 feet in No. 3 Moody; in Section 8-17-14 it set surface 10-inch and has drilled to 300 feet in No. 1 Neely and in Section 33-15-16 set and drilled plug in 6⅝-inch at 2,275 feet.

J. Marr is moving rig onto No. 1 J. Murphy, Section 17-16-15. The Monarch Oil Co. set 6-inch at 1,955 feet in No. 1 Harrell, Section 17-16-15. The Murphy Trustees set surface 10-inch and drilled to 1,415 feet in No. 2 Lawton and rigging up No. 3 Lawton, Section 7-16-15.

The Oil Operators Trust is rigging up to drill No. 2 Billyiu, Section 8-16-15, formerly reported No. 1 Billyiu in error. In Section 10-16-15 it set 6⅝-inch at 1,860 feet in No. 1 Lawton. Page and others are drilling at 1,550 feet in No. 3 Murphy, Section 15-16-15. The Pan-American Oil Co. set surface 12½-inch and drilled to 320 feet in No. B-3 C. L. Saxon, Section 4-16-16. The Pure Oil Co. set 6-inch at 1,965 feet in No. 1 Craig, Section 15-16-15. Sam Richardson and others are waiting on standard rid at 2,185 feet for No. 2 L. Lawton, Section 10-16-15. The Roxana Petroleum Co. is waiting on standard rig at 2,085 feet in No. 1 J. Burns, Section 20-16-15. Ray and others are waiting on casing at 1,960 feet in No. 1 Long, Section 28-16-14.

The Simms Oil Co. is drilling at 2,635 feet in No. 1 Childs, Section 8-16-16. Smitherman & McDonald set 6-inch at 2,200 feet in No. 2 Holloway, Section 6-16-16. The Standard Oil Co. is drilling at 1,525 feet in No. B-2 Saxon, Section 5-16-16. Starter and others have rig up on No. 1 Little, Section 21-16-12. Stock and others are shut down repairing rig on No. 3 Polk & Ezell, Section 18-17-14, at 1,790 feet. Steen and others are rigging up to drill No. 1 Tufts, Section 7-17-14. The Sun Oil Co. is rigging up to drill Nos. 5 and 6 Hays, Section 3-16-15.

Tarver and others set 6-inch at 2,235 feet in No. 3 Saxon, Section 5-16-16. The Texas Co. is rigging up to drill No. 2 Guy Hays, Section 4-16-15. In Section 14-16-15 the Texas Co. is drilling in rock at 1,875 feet in No. 1 E. G. Murphy; in Section 21-16-15 waiting on standard rig at 1,990 feet for No. 1 F. G. Johnson and in Section 2-16-15 set 6¼-inch at 1,950 feet in No. 1 J. T. Murphy.

The Vitek Oil Co. is drilling at 1,440 feet in No. 3 Allen, Section 18-17-14. Weatherbee and others are drilling at 1,960 feet in No. 1 Holloway, Section 6-16-16. The Wilcox Oil Co. is sidetracking bit at 2,050 feet in No. 2 Murphy, Section 7-16-15, after setting 6-inch at 1,910 feet. Woodley and others are drilling at 1,470 feet in No. 6 Van Hook, Section 8-18-14.

Ouachita County Completions

Five producers and one failure were reported from this field last week. Three of the producers are in the recently opened territory in the extreme west edge of the field, Sections 24 and 25-15-17. The Mangus Oil Co. completed No. 1 Mangus, Section 24-15-17, near the Pioneer State producer, estimated flowing 250 bbls. by heads at 2,280 feet. In the same section the Pioneer State Oil Co. completed its third well on the Mangus lease, estimated flowing 200 bbls. by heads at 2,290 feet. In Section 25-15-17 Rogers and associates completed No. 1 Word, near the recently completed Burch Walker producer, flowing 100 bbls. through 2-inch tubing and packer at 2,280 feet.

In the old light oil territory the Magnolia Petroleum Co. completed No. 1 W. A. Smith, Section 31-15-16, flowing 5,000,000 feet of gas and 250 bbls. of oil at 2,250 feet. The Smith Refining Co.'s No. 1 Myar Estate, Section 30-15-16, blew in estimated making 2,000 bbls. of oil at 1,960 feet.

Newton and associates struck salt water at 2,505 feet and abandoned No. 1 Martin, a test they were drilling in Section 30-12-16, several miles north of production.

Drilling Operations

A summary of operations in Ouachita County, including the Stephens Field area, for the week shows 4 wells waiting standard rig, 6 temporarily abandoned, 41 drilling, 6 rigged up, 18 derricks and 2 locations. A slight increase in drilling activity is noted in this field, due to the several producers which have been recently completed on the extreme west edge.

The Arkansas Natural Gas Co. is drilling at 1,350 feet in No. 1 Snyder and down 560 feet in No. 3, Section 34-15-15 in the heavy oil area. In this same territory the Houston Oil Co. has derrick up for No. 1 Reynolds, Section 27-15-15. The Owenwood Oil Corp. has a fishing job at 1,000 feet in No. 1 Snyder, Section 34-15-15. In the same section the Roxana Petroleum Corp. has rig up for No. 1 Snyder. The Standard Oil Co. has rig up for No. 2 Hardy, Section 4-16-15 and setting 6-inch casing at 1,875 feet in No. 1 Griffin, Section 33-15-15. The Sure Oil Co. has derrick built for No. 2 Joyce, Section 34-15-15.

In the light oil territory Burch Walker set 6-inch casing at 1,965 feet in No. 2 LaGrone, Section 25-15-17. W. W. Brown set 6-inch casing at 1,835 feet in No. 1 Townsite, Section 30-15-16. The Gulf Refining Co. is down 1,895 feet in No. 2 Meakin, Section 29-15-16. Hunt and others set liner at 1,935 feet in No. 1 Keller, Section 24-15-17, and in Section 29-15-16 have taken over No. 2 Myer formerly reported the well of the Smackover Production Co., abandoned at about 400 feet, and now drilling at 1,050 feet. Johnson and others are down 1,800 feet in No. 1 Fincher, Section 29-15-16.

The Johnston Drilling Co. is down 100 feet in No. 1 Wells, Section 25-15-17. The Magnolia Production Co. has rig up for No. 1 Shirley-Berg, Section 29-15-16. The Magnolia Petroleum Co. has derrick built for No. 1 Patton, Section 32-15-16.

The Smith Refining Co. set 6-inch casing at 1,860 feet in No. 1 Patton, Section 31-15-16. Solmson and others have derrick up for No. 1 Fee, Section 30-15-16. The Sun Oil Co. is waiting on standard rig to pump No. 3 Hardin at 2,035 feet, Section 27-15-16. White and associates are down 1,900 feet in No. 1 Wells, Section 25-15-17.

(Continued on Page 170)

Dayton

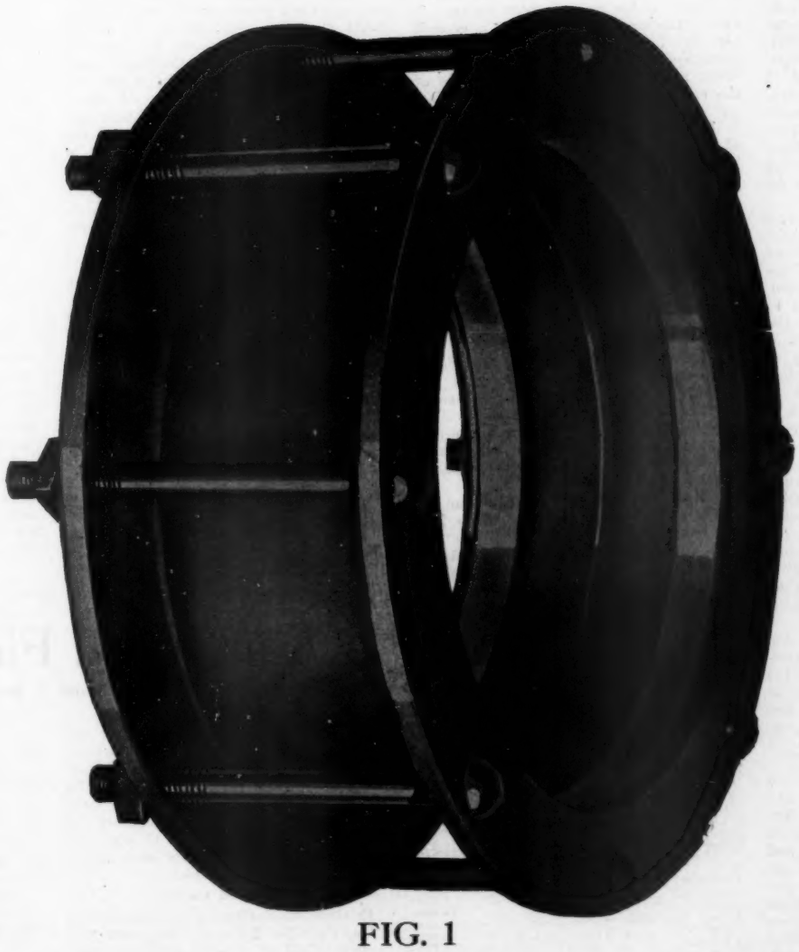


FIG. 1

All Steel Pipe Couplings

The DAYTON PIPE COUPLING Co.

Dayton, Ohio.

were to the effect that after being drilled... No. 2, G. E. Murphy, Section 8-16-13 ... rig at 1,900 feet for No. 1 F. G. Johnson

Gulf Coast Oil Operations

By P. L. McGreal

Gulf Production Co. and Snowden & McSweeney's No. 6 Davis opens new pool at Big Creek in Fort Bend County with 800-bbl. producer. United North & South Co.'s No. 2 Mercer, Luling, good for 600 bbls. M. K. Towns Co.'s No. 2 Merriweather, flowing 700 bbls. by heads.

HOUSTON, Tex., Oct. 1.—Regardless of what conditions prevail in the other oil fields of the country, the production of heavy gravity oil in the Gulf Coast Pools is steadily declining. Both the gross daily average and the new output are included in this statement. It is estimated that the daily average output coming within the definition of Grade A is between 75,000 and 80,000 bbls. per day, or the lowest in four years. It would appear that the curtailment of operations had about reached the limit in the Coastal region and naturally the question of future domes and the prospects comes up for discussion.

Orange and Hull are the only two active pools at present and even there the work is only about 60 per cent of normal. Just now the limits of the Orange Pool are apparently defined, although the Sun Oil Co. is trying to extend them to the northeast and the southwest. Operators in the old part of the district have adopted the policy of deepening former producers when they cease producing from the sands above.

During the past six months the bulk of the work in the Hull Pool has been confined to the new northwest side of the dome. Efforts to further extend the limits out from the dome have been fruitless and drilling is now confined to inside locations. The Texas Co. and Vacuum Oil Co. are drilling a joint test on the southwest side, 2,000 feet from production, but even if a well is developed there will be small chance for any undue activity as the close-in acreage has been secured.

In such pools as West Columbia and Humble there is still considerable acreage to be drilled on the north side of the first-named district and the east side at Humble. These are the deep sand sections and the acreage is in the hands of one company.

Deep Sands at Goose Creek

The east side of the Goose Creek Pool holds possibilities for deep sands when market conditions justify drilling very deep holes. The limits of the other pools were defined years ago, although now and then venturesome operators make attempts to extend them, the last rally being on the north side of the Sour Lake Pool. The Rycade Petroleum Co. is now making a second attempt to find a deep sand off the old Spindletop Dome. A few years ago a similar effort was made on the east and southeast sides at Saratoga and the old Batson Pool has not been without its deep sand exploration work. The Rycade (Amerada Petroleum Corp.) is also trying to extend the east side of the Markham Pool in Matagorda County.

Not much of an encouraging nature can be said of such new pools as Blue Ridge and Pierce Junction, where hundreds of thousands of dollars have been expended. Some big wells were developed but they lacked staying qualities and most of them went to water. The pipe lines list the product of these two districts as below Coastal standard and quote it at 90 cents, or 10 cents lower than the other pools.

The Gulf Production Co. and Snowden & McSweeney jointly opened a new pool at Big Creek in Fort Bend County. Their No. 6 Davis there came in 10 days ago at 3,880 feet, flowing 800 bbls., the best well to date. When it was pinched down to 200 bbls., because of lack of storage, it sanded and a crew is now working it over. The same interests have a derrick for No. 7 Davis, 1,000 feet northwest from No. 6. Rich and others are deepening an old hole on the south side of the creek.

Barber Hill Prospects

Barber Hill, a dome that rises 82 feet above the surrounding prairie, in Chambers County, 10 miles northeast from the Goose Creek Pool, has prospects for the future. The present production has been developed on the southwest side of the dome, the sands ranging from 1,960 to 3,200 feet deep. The deeper sands are in the flats off the dome. During the week, the Republic Production Co. abandoned No. 1 Fisher there around 2,000 feet, after trying to work it over from a 50-bbl. well. Mills Bennett and the Coastal Oil Fields Co. have shut down tests on the Barrow acreage and the Humble Oil & Refining Co. is sidetracking No. 3 B. & F. The Texas Co. surrendered 1,600 acres on the north and northeast sides of the dome, after drilling three tests, one of them going to 4,600 feet.

Daily Average Gross Production

The estimated daily average gross production of the Gulf Coast Pool, the Laredo district, Somerset Field and Milam County, is placed at 99,200 bbls. for the week, compared with an estimate of 100,400 bbls. for last week. The estimate for the heavy gravity Gulf Coast alone is 91,865 bbls., against 93,120 bbls. last week, or a decrease of 1,255 bbls. The estimate for the Luling Field is 10,000 bbls. actual, which is not included in the totals.

The estimate for each district is as follows:

District—	Bbls.
Batson	1,320
Blue Ridge	840
Barber Hill	540
Dayton	80
Damon Mound	2,110
Edgerly	415
Goose Creek	13,675
Humble	6,365
Hull	20,800
Jennings	750
Markham	105
Orange	15,600
Pierce Junction	650
Spindletop	825
Saratoga	1,765
Sour Lake	5,675
Somerset and Piedras Pintas	3,465
Vinton	5,965
Welsh and Anse La Bute	85
West Columbia	14,300
Miscellaneous	3,870
Total	99,200

So far as completed wells are concerned, the record of the week is merely a duplicate of the previous seven-day period.

Orange Pool

Very few wells were finished and these have no special significance, either with reference to sands or locations. In the Orange Pool, the Brownie Babbittee Oil Co.'s No. 5 McLean is flowing 2,000 bbls. at 4,100 feet after it had been worked over and new screen set. Same company is testing No. 4 Winifree. The Orange Petroleum Co.'s No. 8 Winifree is bailing at 3,800 feet. The Rycade Petroleum Co.'s No. 1-B State Land, on the banks of Cow Bayou, is bailing at 3,900 feet and Nos. 1-A and 3-C are drilling. The Kishi Development Co.'s No. 2 Smith-Foreman is bailing at 3,175 feet. The Sun Oil Co.'s No. 1 Gunstream is deepening at 3,635 feet. These are all in the older part of the pool. The Sun Oil Co.'s No. 2 Brown, southwest of production, is drilling ahead at 4,320 feet and the same company's No. 1 Kato, northeast of production, is making the third test. The American National Oil Co.'s No. 1 Winifree, also northeast of production, cored at 3,400 feet.

In the Hull Pool, the Gulf Production Co.'s No. 3 Harrison, fee, on the northwest side of the dome, is a 100-bbl. pumper at 2,520 feet. The Mecon Oil Co.'s No. 5 Mecom, which came in last week making 2,000 bbls., is now flowing 800 bbls. per day by heads. The Monarch Oil & Refining Co. is starting No. 1 Mecom and drilling No. 2 Miller below 3,250 feet, with No. 3 at 1,760 feet. The Link Oil Co.'s No. 4 Riviere is at 1,780 feet. The Yount-Lee Oil Co.'s No. 2 Taylor fee, is below 3,000 feet. A total of 19 wells are drilling in the pool and four derricks standing.

Chapman and others' No. 4 W. & P., in the Humble Pool, is pumping 35 bbls. at 1,800 feet, 22 gravity oil. It blew out 10 days ago and was put on the beam after the gas exhausted itself.

In the Edgerly (La.) Pool, Gibson & Co.'s No. 4 Landry, a workover, is pumping 35 bbls. at 2,765 feet and in the Vinton Pool the Marrs McLean Co.'s No. 4 Gray is pumping 75 bbls. at 2,025 feet.

Southwest Fields

The operators in the districts in Webb and Zapata Counties, known as the Laredo Fields, will meet at Mirando City Tuesday to discuss market conditions and the situation, as it pertains to the district. The Misko refinery, built by O. W. Killiam and associates, at Mirando City, made its first run of 1,200 bbls. during the week. The company will manufacture lubricating stocks, gas and fuel oils.

A number of wells in the Schott district will be deepened from 1,600-1,700 feet to 1,940 feet, where the Magnolia Petroleum Co.'s No. 11 is pumping 45 bbls. of 45 gravity oil. The Witherspoon Oil Co.'s No. 13 is being drilled deeper after getting a dose of salt water in the regular sand. The Carnahan Production Co.'s No. 54 is good for 100 bbls. and No. 44 Ojulas has been spudded in. The Lucas and others' No. 1 Kirkpatrick, which came in last week and extended the Mid-Ojulas district to the south, is expected to lead to more drilling in that direction. The Chicago Petroleum Co. set casing at 1,630 feet in No. 1 on the north end of the Mid-Ojulas and will drill it in. It is an offset to the Esperanza Oil Co.'s pumper.

Luling Field

In the Luling Field, the United North and South Oil Co.'s No. 2 Mercer came in early in the week rated at 600 bbls. A liner is being set in same company's No. 4 Tabor, reported flowing wild at the rate of 1,500 bbls. and making sulphur water last week. An effort is being made to cut off the sulhpur water which is thought to be coming from above the sand. It will be recalled that this test was dry in the sand at 2,100-2-200 feet and was drilled to 2,535 feet, where it staged a gas blowout with the bit 10 feet in the sand. It is in the proven part of the field, but means a possible new deeper sand than the original pay. The M. K. Towns Oil Co.'s No. 2 Merriweather, also in the proven section, is flowing 700 bbls. by heads. The Magnolia Petroleum Co.'s No. 1 C. Byrd blew in at 2,095 feet and is good for 200 bbls. with a very strong gas pressure. Like the other two completions it is lo-

(Continued on Page 208)

Kansas Oil Field News

By Ralph T. Baker

Kansas operations continued at the low figure maintained for several weeks. A summary of the work on September 22 showed 25 locations, 42 rigs, 54 drilling wells and 95 shut down, a total of 216 operations. On September 15 there were 19 locations, 43 rigs, 54 drilling wells and 99 wells shut down, a total of 215 operations.

Greenwood County

In Greenwood County, the Cosden Oil & Gas Co.'s No. 2 Pinon, CWL SW NE, Section 27-23-13, was good for 10 bbls. after a 60-quart shot in sand at 1,818-35 feet. The Darby Petroleum Co. had a rig on the ground for No. 6 Holland, C SW NE NE, Section 8-23-11. D. A. Weiss & Co.'s No. 1 Mather, NE Cor. NW, Section 31-22-10, was estimated good for 300 bbls. after shooting with 40 and 80 quarts in sand at 2,507-64 feet.

Roth & The Mission Oil Co.'s No. 2 Scott, SW cor. NW NE, Section 22-23-10, got pay sand from 2,128-52 feet and after a 60-quart shot, it was considered good for 100 bbls. Max Sokolow's No. 1 Youssi, SE cor. NE SW, Section 13-24-10, was dry at 2,650 feet. Fisher, Lauch & Moore's No. 6 Seeley, SW cor. SE SE, Section 5-23-11, was good for 150 bbls. after a 170-quart shot in sand at 1,959-2,002 feet.

Winters and others had timbers on the ground for No. 1 Jackson, SW cor. Section 1-25-8. The Darby Petroleum Co. staked a location for No. 6 Holland, SW cor. NE NE, Section 8-23-11. The Cosden Oil & Gas C .'s No. 1 Clopton, SE cor. SW, Section 18-22-11, filled up 800 feet with oil in 40 minutes from pay sand at 2,079-81 feet. It was shut down for tankage after filling 1,700 feet.

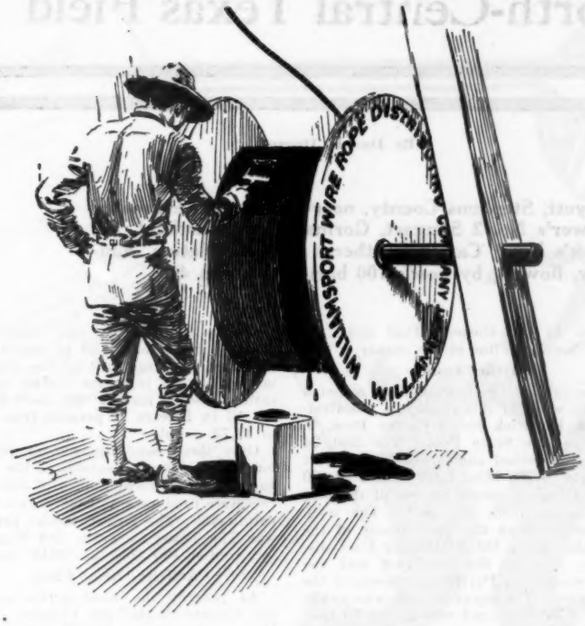
Rogers and others' No. 1 Leedy, NE cor. SE, Section 36-22-9, Chase County, was dry at 2,645 feet.

In Lyon County, Charles A. Gentles' No. 1 Garriott, C SW NE NE, Section 8-23-11, was dry at 2,648 feet.

Butler County

Butler County, as usual, showed several disappointments. Dutton and others' No. 1 Palmer, NW cor. NE SE, Section 32-26-6, was dry at 2,818 feet. The Cascade Oil Co.'s No. 3 Demoure, SE cor. NE NE, Section 7-26-7, was abandoned as dry after drilling to 2,799 feet. Shawver & Sutter's No. 1 Crowley, NE cor., Section 22-28-5, was dry at 2,794 feet. The Connell Petroleum Co.'s No. 1 Nelson, NW cor. NE, Section 1-26-3, was dry at 2,803 feet. Morgan & Clark's No. 1 Smith, SE cor. SW SE, Section 6-29-5, was dry at 2,865 feet.

Near the center of Marion County, Ben Lampl and others were spudding No. 1 Anderson, SW cor. NW SW, Section 2-20-3e.



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North-Central Texas Field

By Dan F. Dugan

Miller Brothers' No. 1 Boyett, Stephens County, near-completion, estimated at 700 bbls. Kirk & Brewer's No. 2 Shugart, Gorman Pool, Eastland, 100 bbls. Bridwell & Heydrick's No. 1 Carter Brothers, semi-completion, Sunshine Pool, Archer County, flowing by heads 700 bbls., settles to 400.

FORT WORTH, Texas., Oct. 1.—Production runs in the North Central Texas Field held steady for the week in review compared with the previous week's runs. A gain of 1,805 bbls. was made by the Electra Pool, the largest increase reported from the field. Burkburnett increased 205 bbls. and Iowa Park 195 bbls. daily over the previous week. All the other pools reported losses. The gains and losses checked show a total daily production of 113,690 bbls. as against 112,735 for the previous week, a gain of 995 bbls. daily for the entire field.

Stephens County

It is reported from Breckenridge that Miller Bros'. No. 1 Boyett near the west edge of Stephens County is a near completion of considerable importance. The well which is producing from the 3,600-foot level is reported showing around 700 bbls. daily. It is in the same district as The Texas Co.'s recent No. 5 Heathley, which was rated at nearly 800 bbls. daily.

The Ibex Pool, just across the Schakelford County line from Stephens is by far the most active part of the deep lime field.

The Swensondale Oil Co. has made a location for its No. 30 Swenson on the Swenson ranch, about 14 miles southwest of Breckenridge.

The Middle States Oil Corp. has made two new locations near the north line of Stephens County.

Eastland County

While activities in development and field work continue slow, the building of casinghead gasoline plants in this County continues. The Gulf Production Co. is just completing a plant on the Kinnebrew lease west of Eastland, which will take care of the gas from its own wells on the Kinnebrew and Caudle leases and also that from other nearby wells.

Three miles northeast of Eastland the Hall Gasoline Co., which has a big gasoline plant operating at Desdemona, is building a plant on the J. Z. Miller lease, owned by Webb T. Eby, and associates. The first unit of the plant cost $60,000; when completed there will be a total investment of $150,000. There are four producing wells on the Miller lease at present and the derrick is up for No. 5.

Authorities on casinghead gas plants at this time insist that Eastland County leads any county in the entire United States in the production of casinghead gasoline.

This industry has developed in the past three years until it ranks second to the oil industry and while the force required to operate a single plant is not large, the great number of plants gives employment to a considerable number of men. It saves millions of feet of gas from waste and increases the royalty received by land owenrs. It also adds many hundreds of thousands of dollars to the taxable values of the county.

The largest completion reported for the week is the Kirk & Brewer No. 2 Shugart. It is reported as showing initial 100 bbls. daily at 2,335 feet. It is located in the Gorman Pool near the south boundary line of the county.

Archer County

The largest semi-completion reported for the week in this county is the Bridwell & Heydrick No. 1 Carter Bros. in the Sunshine State Pool. The first 24 hours it swabbed and flowed by heads at the rate of 700 bbls., later settled to 400 bbls., going on record as one of the best completions from the pool. The well, located in Block 61, lies midway of the Sunshine State Oil & Refining Co.'s discovery well to the northeast and the same company's Parrish producers to the southwest. The top of the pay was picked up at 1,569 feet, and was drilled 19 feet. Drilling has also commenced on the Bridwell-Heydrick No. 5 Mrs. Carter, offsetting their No. 1.

The second largest initial producer not yet reported as a completion is probably the Sibley and others' No. 4 Wilmot, at 1,586-91 feet, it is swabbing around 300 bbls. daily.

Completions for the week show none of exceptional large daily production. The Sunshine State Oil & Refining Co.'s No. 7 Carter, reported at 275 bbls. at 1,585 feet; the same company's No. 5 Carter Bros. 260 bbls., at 1,580 feet, and the Hester Hawkins No. 2 Mrs. Carter, 300 bbls. at 1,575 feet.

An interesting test will be drilled on the Helms ranch about 1¾ miles northeast of Dundee. Stewart and others of Wichita Falls have erected a derrick and are moving in machinery and will start drilling at once. The test, which will be a semi-deep one, calling for a 2,000-foot hole, unless a paying horizon is encountered, will be watched by the operators in that section, being located in wildcat territory, though dry holes have been drilled.

Archer County is practically the only territory in the North Central Texas Field that continues to keep up its development and its present day activities would be far greater if normal conditions prevailed. One reason is that independent refiners at Wichita Falls, who are also producers, have gone ahead with development, bringing more reluctant operators along with them, whether they desired to or not, in order to protect their leases.

Moving of the headquarters of the Panhandle Refining Co. to Wichita Falls, it is announced from Dallas, will start next week. The company has obtained office space in the Staley building, using the offices now occupied by the American Refining Co., which is moving to the City National building. The Panhandle Refining Co., Wichita Falls' first refinery, moved its executive offices to Dallas in 1919.

Wichita County Pools

Another quiet week was passed in the Wichita County pools. Very little drilling activity is being shown, the majority of drilling tests being offsets. A number of new locations have been made in the South Electra, Clara and Burkburnett Fields, but actual drilling has been held up. In the County as a whole drilling development has witnessed little change in four weeks. Wichita County operators view the recent cut in the price of crude with optimism. It is their belief that the bottom has just about been reached, which will tend to stabilize the industry. A large part of the crude oil in this district is in the highest classification posted, making the posted price for oil in Electra at present from $1.30 to $1.75 a bbl.

Only three completions were reported for Wichita County outside of the Burkburnett and Hirschi Pools; of the three, two were producers and one was a disappointment. The largest initial producer was The Texas Co.'s No. 284 Waggoner for around 100 bbls. at 1,945 feet.

Activity Near Clara

At present the most active spot in the County is in the vicinity of the Hammond well on the Saunders tract northwest of Clara, where a number of new derricks are going up to offset the Saunders well. On the East the McDabb Oil Co. has a derrick up for No. 2 Saunders, and No. 2 Potter and will start drilling at once. To the south of the Hammond producer, J. J. Perkins is to offset with No. 1 Saunders. L. P. Hammond also has made locations to the north and west of his No. 1 Saunders.

The Pink Hammond No. 1 Saunders was the week's chief development, as drilling the pay it made an initial flow by heads of around 175 bbls., later increasing this flow. It makes a 700-foot extension to the area recently opened up at Clara. The Magnolia Pipe Line Co. is building a 3-inch pipe line to the Hammond well and will connect early next week.

The Gulf Production Co. is reported to have purchased a 60-acre lease out of the Saunders land, to the north and west of the (Pink) Hammond well and will drill a test at once.

In the Hirschi Pool the Gulf Production Co. has set and cemented casing on the sand at 1,886 feet in No. 12 Dale, Block 835.

It is reported from Wichita Falls that the Staley Oil Co.'s No. 1 Potter in Tillman County, Oklahoma, is showing initial production of 100 bbls. after a light shot at 1,622 feet. The new well is in the NE cor. SE, Section 5-5s-14w, and is a slight extension of the Red River or "Receivership Pool." Two or three other wells have been completed in that vicinity since the release of the land in the river bed, north of the medial line by the Federal receiver. The wells have not been of the sensational size which were first credited to the Red River Pool, four years ago, when the boundary suit was first instituted, but they have been wells ranging from 100 to 250 bbls. daily.

Burkburnett-Hirschi

Completions: The Clark and others No. 5-A Ward and Todd dry, at 1,822 feet.

Drilling: The Texas Co.'s No. 1 Potter, cleaning out at 1,850 feet; Coleman Drilling Co.'s No. 1 Hewitt, drilling at 645 feet; Cooper and others' No. 1 Hearn, drilling in shale at 1,605 feet; Langford and others' No. 7 Langford drilling in brown shale at 1,410 feet. Lewis and others No. 2 Georger, drilling without any showing at 2,405 feet; Magnolia Petroleum Co.'s No. 95 Reilly, plugged back to an oil sand and will test at 718; same company's No. 98 Reilly, driling at 1,566 feet; No. 99 Reilly, drilling underreaming lugs at 1,455 feet; No. 6 Holtzen, cleaning out after a small shot, sand showing a little oil at 1,850 feet; Sun Oil Co.'s No. 21 Hirschi, cleaning out at 1,882 feet; No. 22 Hirschi, drilling at 805 feet; Robinson Oil Co.'s No. 5 Roller, has a sand at 1,150 feet, swabbing around 35 bbls. a day.

Wichita-Electra

Completions: The Texas Co.'s No. 283 Waggoner, 100 bbls. at 1,948 feet; Buffalo Texas Co.'s No. 3-B Douglas, 10 bbls. at 1,050 feet; Finley and others' No. 2 Ancell, dry at 1,745 feet.

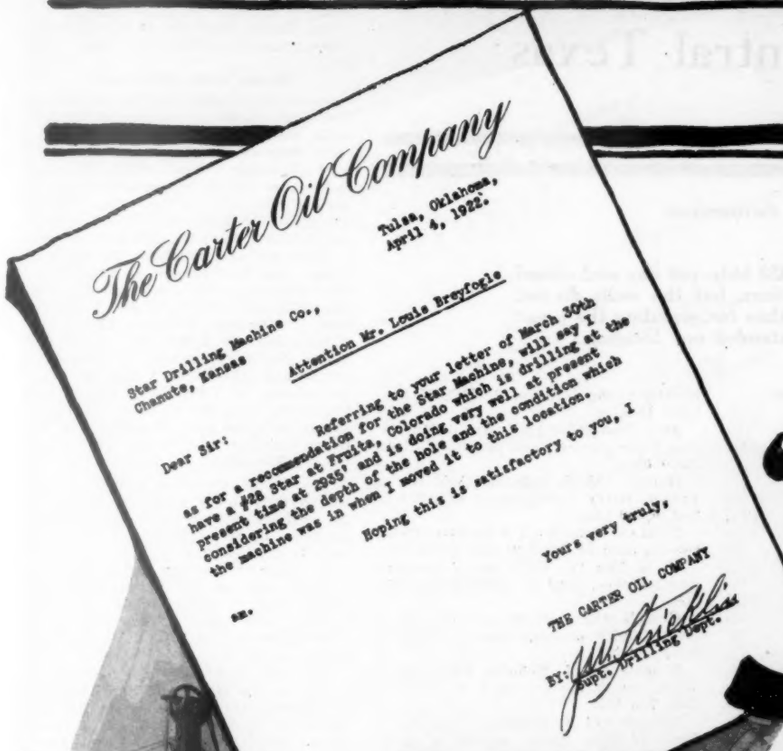
Drilling: The Texas Co.'s No. 282 Waggoner, drilling in blue shale at 1,925 feet; No. 284 Waggoner, drilling in blue shale at 1,585 feet; Holcomb and others' No. 1 Zeiset, drilling at 865 feet; Magnolia Petroleum Co.'s No. 1 Tuttle, set pipe on bottom and ready to drill at 1,975 feet; United Production Co.'s No. 3 Jennings, underreaming 5-⅞-inch casing to 1950 feet, total depth 1980 feet; Apperson and others' No. 1 Ancell, fishing at 895 feet; Knight and others' No. 1 Fassett, drilling at 305 feet; Ladd and others' No. 3-A Martin, moving in a rotary machine to drill deeper at 745 feet; Magnolia Petroleum Co.'s No. 26-A Waggoner, drilling at 415 feet; No. 1-C Waggoner, at 1,710 feet; No. 1 Pere, at 690 feet; Perkins and others' No. 1 Burnett, at 205 feet; Peterson and others' No. 1 Throckmorton, picked up a water sand at 1,950 feet, pulling pipe to drill deeper; Ryan Petroleum Co.'s No. 7 Nance, drilling at 795 feet; Texhoma Oil & Refining Co.'s No. 3-A Burnett, at 855 feet; No. 1-H Waggoner, drilling casing seat at 1,758 feet; No. 9-F Waggoner, setting 6⅝-inch casing at 911 feet on top of an oil sand. Lucky Hill Oil Co.'s No. 1 Lautenslager, drilling at 1470 feet; Byrne and others' No. 1 Corder, drilling without any showing at 1,530 feet; Electra Gulf Oil Co.'s No. 1 King, drilling at 1780 feet; Robinson and others' No. 1 McCaleb, at 1,945 feet; Hobbs Bros.' No. 17 Yarborough, drilling with a rotary machine at 205 feet; Noble Oil Co.'s No. 1 Waggoner, running 10-inch casing to a corected depth of 660 feet; Pigg and others No. 1 Forrester, a fishing job at 1800 feet; South Vernon Oil Co.'s No. 1 Stephenson, cleaning out at 1,087 feet; Mike Sullivan's No. 1 Waggoner, drilling in shale at 1,805 feet; Wirt Franklin's No. 1-A Womack, driling at 1,980 feet.

Archer County

Completions: Bell and others' No. 1 Wilson, dry at 800 feet; Bridwell and Heydrick's No. 4 Mrs. Carter, 47 bbls. at 1,375 feet; Bridwell and others' No. 1 Wilson, 20 bbls. at 1,410 feet; Hester and others' No. 2 Mrs. Carter, 300 bbls. at 1,575 feet; Sunshine State Oil & Refining Co.'s No. 7 Parrish, 175 bbls. at 1,585 feet; same company's No. 3 Carter Bros., 165 bbls. at 1,580 feet; same company's No. 5 Carter Bros., 260 bbls. at 1,580 feet; No. 7 Carter Bros., 275 bbls. at 1,585 feet; Sweatt and others' No. 4 Wilmot, dry at 1,423 feet.

Drilling: Atlantic Oil & Producing Co.'s No. 1 Wilson, underreaming 8¼-inch casing at 1,310 feet; Barkley and others' No. 1 Wilson, driling at 995 feet; Barnes and others' No. 1 Wilson, at 1,310 feet; Bell and others' No. 1 Wilson, testing an oil sand at 1,590 feet; Bower and others' No. 2 Ferguson, ratholing at 1,605 feet; Carter and others' No. 2 Ferguson, cleaning out on top of oil sand at 1,762 feet; Chenault and others' No. 2-C Wilson, testing an oil sand at 1,585 feet; No. 2 Wilson, drilling at 1,270 feet; Clayton and others' No. 2-B Richardson, at 1,132 feet; Rotary Drilling Co.'s No. 2 Wilmot, at 1,000 feet; Dilday and others' No. 1 Ferguson, reaming to set 6⅝-inch casing on top of an oil sand at 1,756 feet; Dixon and others' No. 1 Wilson, pulling 6⅝-inch casing at 1,600 feet; Empire Gas & Fuel Co.'s No. 1 Wilson, driling at 200 feet; Featherstone and others' No. 1-B Wilson, drilling in an oil sand at 1,575 feet; Ferguson and others' No. 1 Jackson, driling in blue shale at 1,275

(Continued on Page 176)


The Carter Oil Company

Tulsa, Oklahoma,
April 4, 1922.

Star Drilling Machine Co.,
Chanute, Kansas

Attention Mr. Louis Breyfogle

Dear Sir:

Referring to your letter of March 30th as for a recommendation for the Star Machine, will say I have a #28 Star at Fruita, Colorado which is drilling at the present time at 2935' and is doing very well at present considering the depth of the hole and the condition which the machine was in when I moved it to this location.

Hoping this is satisfactory to you, I

Yours very truly,

THE CARTER OIL COMPANY

BY: Supt. Drilling Dept.

sm.

The "Star" DRILLING-MACHINE

FIELD PERFORMANCE—NOT CLAIMS—Is what counts in a Drilling Machine.

Every man whose duty it is to decide upon the type of Drilling Rig to buy must be guided either by his own experience or that of others in whom he has confidence.

Monthly, there will appear on this page a different letter from representative producers and contractors.

Profit by their experience: USE A STAR

The Star Drilling Machine Company,
Akron, Ohio

Branches: Chanute, Kan., Portland, Ore., Long Beach, Calif.
Export Office: 2 Rector St., New York, U. S. A.

East Central Texas

By Staff Correspondent.

Powell production fell to a daily average of 168,350 bbls. per day and closed the week at 162,345 bbls. Many recent completions, but the wells do not hold up. Field has produced 5,000 bbls. per acre thus far, equaling the great Burbank Field in Oklahoma in this respect. Extended one location.

CORSICANA, Texas, Oct. 1.—The Powell Field produced up to Saturday inclusive about 5,000 bbls. per acre developed. This is a very large production for a new field and it was made possible by the fact that the wells were drilled on small acreage. The wells in the field have been drilled 300 feet apart which gives each well about two acres to draw from and as there were 283 wells that were producing or had produced, the total acreage thus far developed has been about 566 or less than the amount of space in a section of land.

The Mexia Field, which is over two years old has produced about 15,000 bbls. per acre. It was almost as closely drilled as Powell. The Burbank Field in Osage and Kay County, Oklahoma, regarded as one of the greatest developments in the history of the business has produced not much more than 5,000 bbls. per acre. It is older than Mexia but has not yet been drilled up as Mexia long since has been and as Powell soon will be.

In the Burbank Field nearly all the leases are drilled 16 wells to the quarter section and the amount of acreage drawn upon by the 283 wells in Powell is occupied in the Burbank Field by only 57 wells. It is conceded that in the long run Burbank may produce more oil per acre than Mexia and few doubt that it will produce more oil per acre than Powell, because of the conservative way in which the Burbank development has been handled.

It is believed that when Powell produced 207,000 bbls. in one day it made a record it will never equal. On Saturday the production had fallen to 162,345 bbls. and its average for the week was 168,350 bbls., a drop of 11,150 bbls. from the daily average of the week before and 17,650 bbls. from the average of two weeks previous.

Wells Fall Off Quickly

Close drilling in Powell has been responsible for the large recovery of production in a few months but, at the same time, it is in part responsible for the tremendous falling off from the flush production of the wells. The Humble Oil & Refining Co. completed 63 wells with a total initial production of 206,967 bbls. These wells were down to 51,768 bbls. last Friday. The Humphreys Oil Co.'s 49 completions had a total initial output of 185,650 bbls., but on last Friday were producing 31,417 bbls. The Gulf Production Co.'s 35 completions were credited with a total first-day production of 102,600 bbls. and had fallen to 11,328 bbls. The Tidal Oil Co. & Buttram Oil Co. completed 18 wells with an initial production of 92,300 bbls. which had slumped to 22,017 bbls. and these operators came into production later than the others named above.

Two hundred and eight-two wells with a total initial production of 879,907 bbls. were producing 163,280 bbls. on Friday, September 27. The average of these wells the first day was 3,120 bbls. On September 27 they were averaging 586 bbls., a falling off of 81 per cent in production, with the field not over five months old.

The following figures give in detail the initial and present production of companies, the miscellaneous referring to those producing heavy oil in the district.

Powell Production by Companies

Company	No. Wells	Initial Prod.	Prod. Sept. 27
Atlantic Oil Produc. Co.	11	39,800	4,617
Farrish and Others	1	8,000	0
Hughes Oil Co.	1	75	37
Hughes Develop. Co.	13	29,400	850
Humble O. & R. Co.	63	206,967	51,768
Humphreys Oil Co.	49	185,650	31,417
Gulf Production Co.	35	102,600	11,328
Kirby Petroleum Co.	4	10,400	4,400
Magnolia Petro. Co.	1	6,500	25
Mitchell & Jones	2	10,600	516
McMan Oil Co.	11	36,100	5,130
New Domain Oil Co.	1	1,200	865
Roxana Petro. Corp.	14	27,650	3,816
Sims Petroleum Co.	2	765	460
Skelly Oil Co.	3	5,100	2,430
E. S. Smith Oil Co.	4	22,300	780
Sun Oil Co.	4	11,700	1,650
Texas Co. & Mag. Petro.	9	40,500	13,840
Texas Co.	5	8,500	625
Tidal Oil Co. & Battram	18	92,300	22,017
U. S. Texas Oil Co.	4	6,200	530
Witherspoon et al	5	17,900	5,240
Miscellaneous	18	7,600	940
Total	282	879,907	163,280

The field was extended a location south by the completion of the Gulf Production Co.'s No. 1 on the Barron farm, on the Harris survey. It was a 900-bbl. well, while the offset north, started at 7,000 bbls.

Recent Completions

Recent completions include the following wells:

Humphreys Oil Co.'s No. 3 Kent, Smith survey, sand at 2,951-60 feet, 250 bbls.

Humphreys Oil Co.'s No. 40 McKie, Broyles survey, sand at 2,908-13 feet, 1,800 bbls.

Gulf Production Co.'s No. 1 Barron, Harris survey, sand 2,943-54 feet, 900 bbls.

Gulf Production Co.'s No. 4 Murchison, Barry survey, sand at 2,914-75 feet, 2,400 bbls.

E. L. Smith's No. 2 Ramsey, Smith survey, sand at 2,904-48 bbls., 1,200 bbls.

The Humphreys Oil Co.'s Nos. 4 and 8 Kent, Smith survey, did not flow when drilled in. In each case the hole filled about 1,500 feet with fluid, some of which was water.

Roxana Petroleum Corp.'s No. 4 Blumrosen, Lane survey, sand at 2,881-84 feet, 150 bbls.

Atlantic Oil Producing Co.'s No. 8-B Irvine, Taylor survey, sand at 2,909-43 feet, 500 bbls.

Atlantic Oil Producing Co.'s No. 12-B Irvine, Taylor survey, sand at 2,932-46 feet, 300 bbls.

Gulf Production Co.'s No. 1 McKie, Buffington survey, sand at 2,883-2,930 feet, 250 bbls.

Humble Oil & Refining Co.'s No. 8-C Irvine, Taylor survey, sand at 2,910-32 feet, 300 bbls.

Humble Oil & Refining Co.'s No. 2 G. Kent, Smith survey, sand at 2,907-16 feet, 250 bbls.

Humble Oil & Refining Co.'s No. 9-B McKie, Buffigton survey, sand at 2,870-2,935 feet, 1,800 bbls.

Humphreys Oil Co.'s No. 24 McKie, Broyles survey, sand at 2,909-32 feet, 250 bbls.

Humphreys Oil Co.'s No. 28 McKie, Broyles survey, sand at 2,810-69 feet, 300 bbls.

Humphreys Oil Co.'s No. 30 McKie, Broyles survey, sand at 2,837-2,965 feet, 1,200 bbls.

Gulf Production Co.'s No. 3 Murchison, Barry survey, sand at 2,958-75 feet, 2,400 bbls.

Humble Oil & Refining Co.'s No. 2 Brown, Barry survey, sand at 2,938-78 feet, 4,400 bbls.

Tidal Oil Co.'s No. 7-A Ramsey, Barry survey, sand at 2,900-50 feet, 6,200 bbls.

U. S. Tex Oil Co.'s No. 2 Ramsey, Smith survey, sand at 2,961-70 feet, 400 bbls.

Humble Oil & Refining Co.'s No. 6 Kent, Smith survey, sand at 2,928-48 feet, 500 bbls.

Humble Oil & Refining Co.'s No. 7 Kent, Smith survey, sand at 2,816-45 feet, 750 bbls.

Humble Oil & Refining Co.'s No. 3 Mrs. Walker, Smith survey, sand at 2,918-56 feet, 1,800 bbls.

Humphreys Oil Co.'s No. 7 R. I. Kent, Smith survey, sand at 2,942-56 feet, 3,600 bbls.

Tidal Oil Co.'s No. 4-A Ramsey, Smith survey, sand at 2,868-2,937 feet, 3,500 bbls.

The Texas Co.'s No. 6 Kent, Smith survey, sand at 2,905-20 feet, 5,000 bbls.

The Texas Co.'s No. 8 Kent, Smith survey, sand at 2,872-2,920 feet, 700 bbls.

The Texas Co.'s No. 9 Kent, Smith survey, sand at 2,872-2,915 feet, 4,800 bbls.

Dozen Wells Abandoned

In the northeastern end of the field on the Lane survey a number of drilling wells were abandoned, presumably because their owners did not consider them worth finishing. These include Buchner and others' No. 1 Springfield, at 2,700 feet; Cosden Oil & Gas Co.'s No. 1 Springfield, at 2,891 feet; No. 3 Springfield at 2,841 feet; Cranfill & Jones' No. 1 Christian, at 2,900 feet; Farrish and others' No. 1 Christian, at 2,320 feet; Four Night Co.'s No. 1 Springfield, at 700 feet; Calloway Oil Co.'s No. 1 Springfield, at 900 feet; Hardison Elkins' No. 2 Christian, at 2,909 feet; Love and others' No. 1 Springfield, at 2,860 feet; Taylor and others' No. 1 Fair, McCandless survey, at 1,400 feet; Atlantic Oil Producing Co.'s No. 15-B Irvine, Taylor survey, at 2,400 feet; Humble Oil & Refining Co.'s No. 10-C Irvine, Taylor survey, at 550 feet.

Most of the interest is centered around the territory in the southwestern part of the field where there are many undrilled locations in an area about half a mile wide by 2 miles long.

In the northern end of the field new derricks are up for Witherspoon and others' Nos. 7 and 8 Burke, Anderson survey, and the Roxana Petroleum Corp.'s Nos. 9-A and 10-A McKie, Buffington survey.

Hill and others have a derrick up for a test on the Hill farm, Smith survey; the Humble Oil & Refining Co. has derricks up for Nos. 4, 5, 6, and 7 Davis, Barry survey; Nos. 1-A, 2-A, 3-A, Fleming, Greer survey, Nos. 1-B and 2-B Fleming, Barry survey; Nos. 10, 11 and 12 Humphreys, Smith survey; Nos. 7-A, 8-A and 9-A, Ramsey, Smith survey; and 5, 6, 7 and 8 Walker, Smith survey.

The Texas Co. has new derricks up for Nos. 2, 3, and 4 Fleming, Weiner survey.

The Tidal Oil Co. has derricks up for Nos. 4 and 5 Phillips, Harris survey.

West Kentucky—Tennessee

By Vern T. Whitacy

BOWLING GREEN, Ky., Oct. 1.—Development work in the Western Kentucky Field during the week showed unsatisfactory results. Owing to the low prices of crude very little drilling is being done on proven properties.

Out of a total of 30 completions, 13 of wildcat nature, there were 9 producers showing a flush of 118 bbls., 1 gasser and 20 dry.

In Tennessee two dusters were completed, and in Georgia a dry hole is reported. Unconfirmed news from Chattanooga, Tenn., in Hamilton County, states: "Oil in what is believed to be paying quantities has been struck on the R. W. Crabtree place near Chattanooga by John Parks. The well which he has been sinking for several months is producing from 50 to 100 bbls. of fine quality oil per day. The well is about 2,350 feet deep and oil is forcing its way up through a large volume of water."

Activity in Owensboro District

Three completions for the week in the Pellville section of the Ohio-Hancock-Daviess Counties Field has increased the production in this section nearly 30 bbls. The best of the trio is the No. 3 Morrison of the Newton Oil Co., and C. E. Daugherty & Co. The well which was shot Thursday is showing up to the best advantage of any in that section and is regarded as the best deep well in the present area. It finished up at 691 feet with 20 feet of Barlow sand, and while the small casing was being set flowed about 30 bbls. No. 4 Morrison is rigging up. The Kentucky Oil Co. on the Bill Payne lease finished its No. 1 at 742 feet with 13 feet of pay and it is estimated at 5 bbls. Damron Bros., on the John Smith farm, to the southeast of the Pellville Pool, have what is said to be a 3-bbl. pumper in the Barlow sand.

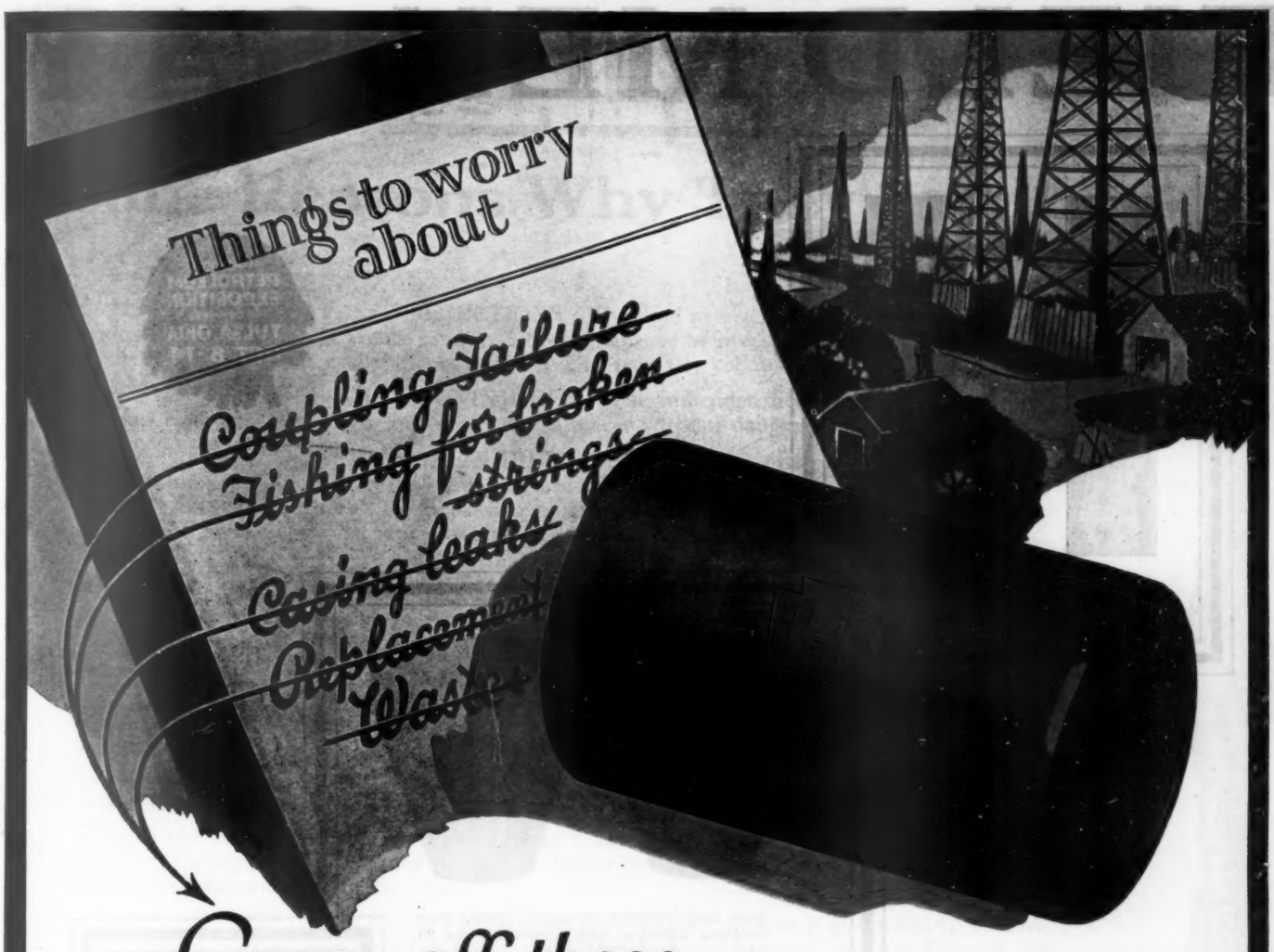
Ten New Wells to Start

During the next 10 days at least 10 wells will be drilling in the Pellville section and in the southeastern extension, the Hurricane district. Some of the work is now under way with the Leeper Oil Co. spudding in on the Howe lease, recently purchased by that company in fee. White and others, of St. Louis, are down about 100 feet on the O. T. Burdette lease, south of the Lafe Payne farm in the Hurricane section on which the Newton Oil Co. is starting its No. 2 Thompson. Kiser & Johnson are spudding in No. 2 Ed Baize in the Pellville Pool. The first well on this lease was a duster. Damron Bros. are drilling at 250 feet on their No. 2 Miller farm, one location from No. 1, which is one of the best producers in the field in the deep sand.

To Start Test Well

The Newton Oil Co. will move a rig to the E. Bickett farm in the Hurricane section for a test well, while C. E. Daugherty & Co. are located on the Virgil Miller farm. Randolph & Stevenson of Bowling Green, are contemplating a test well on the C. Payne farm adjoining the Miller property. O. C. Boop and others have taken over the C. Taber Johnson farm adjoining the Amanda Stewart leases and will drill a deep test. The first well on this farm drilled by Hartman, Parriett & Young, of Lawrenceville, Ill., had only a light showing in the Jett sand. C. E. Daugherty of Monticello is making preparations to move a large rig which he has at Beech

(Continued from Page 46)



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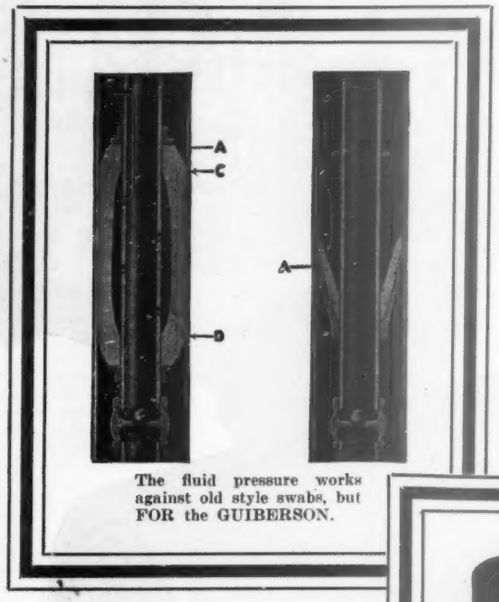
HARRISBURG

Forged Seamless Steel Couplings

those producing heavy oil in the district. Humphreys Oil Co.'s No. 30 McKie, mated at 5 bbls. Damron Bros., on the (Continued from Page 46)

FIELD MEN SAY



The fluid pressure works against old style swabs, but FOR the GUIBERSON.

INTERNATIONAL PETROLEUM EXPOSITION AND CONGRESS TULSA, OKLA. OCT. 8-14

Note good condition of cup at right, after swabbing 2,200-foot well continuously for 30 days.

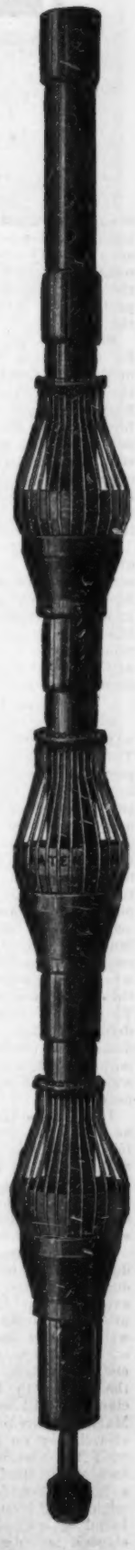
Cut Assembly, as shipped when new cups are ordered.

SAVE THAN SORRY, BETTER BE GUIBERSON

THE GUIBERSON

"THE ONLY SWAB"

Nine Reasons Why They Say It



1. ABILITY TO PASS PROJECTIONS. The fluid pressure which holds the cup rims against the casing walls yields readily, allowing rims to be pressed inward by obstructions, so that swab will pass easily through indented or partially collapsed casing.

2. PASSES PIPE-JOINTS UNINJURED. The imbedded flexible guide wires guide the cup rims past pipe ends and other rough places without danger of injury to cups.

3. STEM AND JARS NOT REQUIRED TO SINK SWAB. Cup rims are resilient and easily compressed inward by upward pressure of fluid. Fluid, when swab is going down, thus by-passes the cups as well as passing upward through the tubing. A weight of 75 to 200 pounds of tubing will ordinarily sink the swab. Heavy stem and jars are not needed.

4. SWAB PRACTICALLY NON-LEAKABLE. The fluid pressure, instead of tending to force the packing away from the casing, as in old style swabs, presses the cup rims more and more tightly against the casing, as the pressure increases. Three efficient cups in series render the swab nearly 100 per cent leak proof.

5. SWABS TUBING AS SUCCESSFULLY AS CASING. In California and other sections where wells are difficult to control, rendering it advisable to set tubing before cleaning out, and then swab through the tubing, great difficulty has been experienced in securing a swab which would operate properly in tubing. Thorough tests have demonstrated that the GUIBERSON-MOWERS SWAB operates as successfully in tubing as in casing.

6. SAME CUPS WILL OPERATE IN 2 WEIGHTS OF CASING. The great resiliency of the cups renders it practical to pass from casing of the diameter for which the cups were designed into slightly smaller or larger diameter casing without interfering with the efficient functioning of the cups.

7. CAN REMOVE WATER FROM BENEATH OIL. Where it is desired to remove slush from a well containing a top layer of oil, the slush can be removed from beneath the oil, by rigging the swab as a "bailer." For this purpose the tubing is left open, 3 or 4 joints of extra tubing are attached above the swab, and a bailer top is used for attaching to wire line. The device is then lowered until the bailer top is below the layer of oil. The slush above the bottom cup and below the bailer top between tubing and casing is then "pocketed," and can be raised to the surface, the oil above the bailer top flowing downward through tubing as device is raised.

8. WILL NOT KINK WIRE LINE. Ease with which the swab enters the fluid, going down, prevents its being suddenly stopped by the fluid, with consequent following in, looping, and kinking, of wire line.

9. DURABILITY OF CUPS. The composition cups used have been perfected by a year of research and experimentation, and are proving far more durable in practice than any composition heretofore used for swabbing purposes.

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CORPORATION

Wyoming Field Operations

By F. B. Taylor

Opening of Teapot Dome senatorial investigation October 15. Total production to date 656,914 bbls. Producers & Refiners get good well on Simpson Ridge, near Medicine Bow, Carbon County. Homestake Exploration Co.'s Sunburst well, reported at 250 bbls., has increased to 4,000 bbls.

CASPER, Wyo., Sept. 28.—The Senate investigation that started to examine the Teapot lease last spring, is to open again October 15. In the meantime, some geologists have been busy examining the Teapot structure and making a report to the investigating committee on the dome.

Since the bids were made last spring for the famous Section 36, in the heart of the Salt Creek Field at Cheyenne and the Midwest made an offer of a cool $5,000,000 cash, which was turned down, for a royalty offer of 65 per cent of production, it has appeared there are many small politicians who think they see an opportunity in badgering the larger oil firms, and without any consideration of the benefits derived to the State from these corporations.

As the time nears for the continuation of the Teapot investigation by the Senate Committee they are attacking the Sinclair lease and operations and in justice to the Mammoth Oil Co. and its officers, a resume of the Teapot operations to date is given to show what has actually taken place on that structure since the Mammoth Oil Co. started work.

Teapot Not as Expected

In the first place, any person familiar with the situation will agree that the Teapot has not turned out as was expected. When first leased, it was held by many that the Teapot was a separate entity from the Salt Creek Field proper, being separated by fault planes that definitely divided the two areas. This has been shown to be a fallacy. There is no water saddle between the two structures, and while there are several fault planes, these have served to assist in the accumulation of petroleum along the fault lines rather than retard it, with the result that the best wells are being found where the exponents of the water saddle theory said was worthless territory. The Teapot has been shown by the wells drilled so far, to have two separate domes, the northern dome producing oil both in shale and the second Wall Creek sand and the south dome showing gas only.

It should be borne in mind that no well has ever been drilled to the Lakota sand in the Teapot. One has been drilled in Salt Creek that is a producer and one in Big Muddy is also a producer, but so far the development and geological decisions are based wholly on the findings of the second Wall Creek sand.

To date, the Teapot Dome has produced 656,914 bbls. of crude from all producing horizons; during September it will average about 4,699 bbls. daily from all producing horizons including all shale wells. There are now 81 wells and rigs on the structure, a standing denial of the claim advanced in some quarters that the Mammoth has not abided by the clause to drill wells in blocks of 20. The Mammoth has never shown the least sign of welching on any part of its contract with the Government, although in the face of the small production found when a great abundance was expected, it might have been an easy matter to have found a loophole to have the original clauses, regarding the number of wells to be drilled, reduced. However, to the credit of the officials of the Mammoth Oil Co., there was never the least intimation that any such thought was entertained.

There are 20 strings of tools active on the Teapot. To obtain these tools the Mammoth helped the contractors move from the Mid-Continent fields and each drilling firm was incorporated, with the contractor taking 50 per cent of the stock and the rest being taken by the Sinclair interests and officials. The contract price is $3.50 per foot, measured from the grass roots and the Mammoth furnishes casing, rig, fuel, water and camp. The wells will average close to $40,000 each and it is computed that the Mammoth has spent $2,328,000 on development work alone, not taking into consideration the cost of the young cities that have been built with every convenience to house the field workers. Another big item of expense was the building of a large tank farm at Teapot, containing two 55,000; two 64,000 and 17 80,000-bbl. tanks which cost about 43½ cents per barrel ready for the oil, and represents an outlay of $1,598,432.

Another factor of considerable importance in considering the Teapot operation is the fact that Harry Sinclair offered in his bid for the Salt Creek royalty oil of the Government, a price based upon Mid-Continent crude markets, this has placed $8,000 more to date on the income derived from this oil by the Government than the Government is receiving from the royalty oil being delivered to other firms, yet through unforeseen circumstances, the pipe line that was to take this oil and deliver it to a market has not been completed, so that Mr. Sinclair and associates must store this crude in the face of a falling market. This means that the crude now in storage at Clayton tank farm will be obliged to show a heavy loss in inventory because of the recent market drop in crude.

Of the 81 wells, rigs and rigs building, in the Teapot by the Mammoth Oil Co., the present status stands at 58 wells completed, of which 20 are flowing oil, 23 are pumping oil, 10 are gas wells, two are producing water which is nearly as valuable as the oil, one is shut down and two are dry holes and abandoned.

Runs for Week

A slight increase in pipe line shipments is noticeable over the previous week's runs:

Salt Creek	130,000
Teapot	4,700
Big Muddy	4,250
Lance Creek	455
Pilot Butte	35
Lander	400
Lost Soldier	5,300
Rock River	4,000
Grass Creek	4,885
Hamilton Dome	510
Elk Basin	1,925
Notches	400
Greybull	215
Osage	1,090
Ferris	200
Cat Creek	5,545
Sunburst	3,650
Miscellaneous	600
Total	168,220

Field Reports

Field reports up to the time the floods started in the oil region indicated that the operators would not complete any large wells this week. The wildcats were affected by the recent price cut to some extent and will shut down until spring, rather than drill into the sands and probably bring in producers in the winter months when the market is low.

A rotary outfit is to go into Salt Creek at once for a test of this type of drilling outfit in competition against cable tools. This rotary is owned by J. M. Curtis who hails from Louisiana and who has contracted for three rotary holes in this region with the Midwest Refining Co., one to be drilled at Salt Creek, another in the Golden Eagle Dome in the Big Horn Basin, and the third to be drilled in the Grass Creek Field, also in the Big Horn Basin.

Oil is now being delivered through the Fargo pipe line from the Poison Spider Field to the Midwest refinery at Casper. This is a heavy, black oil and will be used for making asphalt. The plant at Casper is now taking the crude for the asphalt stills from Notches, Lander and Poison Spider.

The Producers & Refiners Corp. brought in a good well at 680 feet in the new Simpson Ridge Pool south of Medicine Bow, in Carbon County. The crude came up in the hole about 300 feet and tankage will be placed before the well is drilled in. This is one of the shallow wells drilled in this pool and the first well that discovered the oil about 700 feet was started as a deep test and found the oil while in the 20 inch hole. Three other wells were started then by the Producers & Refiners, with machines, to test this shallow showing and this is the first of the three to reach the pay. In the meantime the deep test has been drilled on down and is now 2,163 feet and setting a string of 10-inch pipe. It looks as though the firm has a shallow field, whether it develops a deep pool or not.

Salt Creek has reported two small wells completed in the past week. The Wyoming Associated Oil Co., on Section 14-40-79, found the second Wall Creek sand at 2,202 feet and a very hard sand. The well is thought to be good for 30 bbls. but will be shot in an effort to increase production.

On Section 36-40-79, the same firm completed a well at 1,611 feet and has a producer good for 50 bbls. which will also be treated to a dose of glycerine. Both the above completions are Midwest as the Wyoming Associated is a Midwest subsidiary.

The Western States Oil Co., one of the subsidiaries of the Haskell interests (not Western States firm of the Midwest combination) is preparing to drill several wells in the Maverick Springs Field in Fremont County. This is a black oil field that has been drilled by the Union of California, Ohio, Carter, and some other smaller interests and as there was no market for the oil, the field has never had a pipe line.

Wildcat Near Colorado

The Producers & Refiners is preparing to start a wildcat about 7 miles north of the Colorado-Wyoming State line and about 60 miles south of Rock Springs in Sweetwater County. The location is on the Red Creek ranch, also known as the Gottsche ranch and in the Clay Basin country. No wells have been drilled in this region and nothing is definitely known as to the petroleum deposits. The productive sands are expected to be found in the Frontier formation.

The Ohio Oil Co., drilling on Section 14-17-104, in the Baxter Basin, will abandon this hole for the present as winter is coming on and the tools will be sent to Rock Springs. The location is hard to reach when the roads are snowed up or wet.

The Midwest Refining Co. is preparing to drill the well on Section 11-17-104, in the Baxter Basin, into the sand with a 6¼-inch hole as both attempts at cementing off the water failed and the 8½-inch casing is not holding back the water. The hole will be drilled and the 6¼-inch casing run.

The deep test on the Geary Dome, just northwest of the Big Muddy Field, about 3 miles, is being abandoned as a dry hole by the Carter and Inland Companies. This is one of the deepest holes in this region and was about 4,500 feet below the surface.

Montana

The No. 3 well of the Homestake Exploration Co. on the Howling lease, Section 9-35-2w, is now considered making around 4,000 bbls. daily and is the largest well brought in to date in the Sunburst Field. The well was reported in the sand about three weeks ago and was then making around 250 bbls. but it has steadily increased its production until now it is making the above figure and appears to be settling to a steady production at that rate.

The same firm drilled in a dry hole on the Pewter lease, finding the sand at 1,518 feet and a flow of sulphur water, although this last well is just south of the International Oil Co.'s well on the Halter lease that did about 200 bbls. when first drilled in. The Mutual Oil Co. is also drilling on the Halter lease and has a showing in the Ellis sand which was shot and will be treated to another shot in an effort to make it a commercial producer.

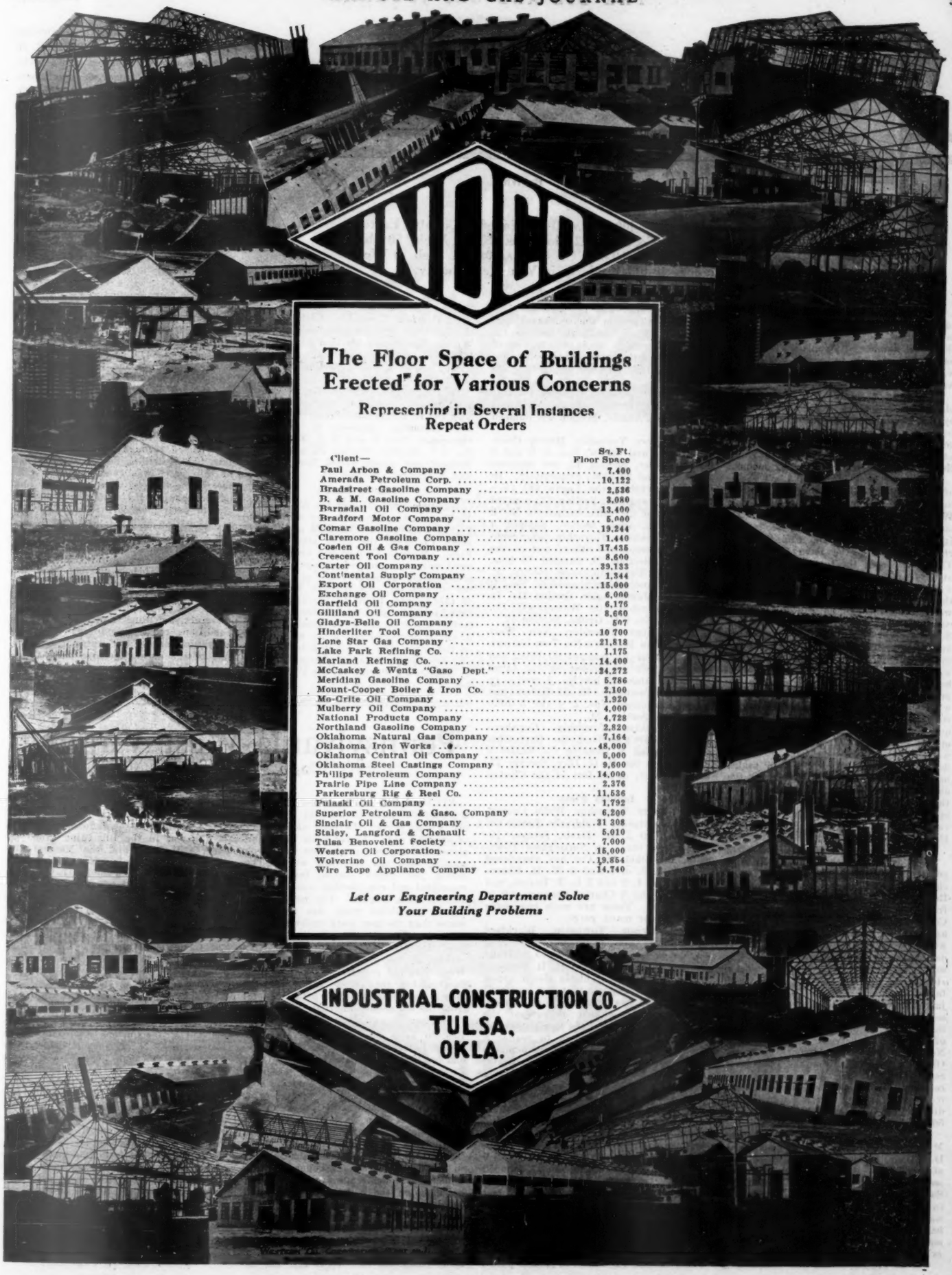
Much interest is shown in the two wells drilling on the extreme west side of the Sunburst area, commonly known as the Spartan and Griffith wells on Sections 28 and 29-37-3w. This activity is southwest of Coutts and Sweetgrass and about 10 miles northwest of Sunburst town, on what is termed the Flyswatter Dome. Nothing has ever been drilled nearby.

LIMIT GASOLINE TAX TO HIGHWAY'S NEEDS

A special committee of the National Automobile Chamber of Commerce appointed to investigate the question of State taxation of motor vehicles has reported principles, which it considers fundamental: "State should be sole special taxing agency—Federal, county and municipal governments should be excluded from the field." "Irrespective of the particular form of special taxation any State may adopt—whether annual registration fees based on h. p., weight or similar factors; or motor fuel taxes—the aggregate amount of these special taxes upon motor vehicles in any one year should not be more than is necessary to the administration of the State Motor Vehicle Department and the maintenance of the improved highways of the State."

PETROLEUM "JOKER" IN CUBA

WASHINGTON, Oct. 1.—Examination of the bill for consolidation of the Cuban railways discloses provisions, which it is charged, are designed to create a monopoly of the petroleum and gasoline industry of Cuba, have been retained in the amended bill as passed by Cuban Senate. The petroleum provisions, which constitute the alleged "joker" of the bill as passed by the Cuban House of Representatives, provide that crude petroleum may be imported only through such ports as are now equipped with tankage facilities. Since these ports are only five in number, and since they are reached only by railroads included in the proposed Tarafa consolidation, it is charged that Tarafa and his associates would virtually be granted a monopoly of the importation of crude petroleum into Cuba. Crude oil has almost completely displaced other fuels in Cuba, it is explained.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Amerada Petroleum Corp.	10,122
Bradstreet Gasoline Company	2,536
B. & M. Gasoline Company	3,080
Barnsdall Oil Company	13,400
Bradford Motor Company	5,000
Comar Gasoline Company	19,244
Claremore Gasoline Company	1,440
Cosden Oil & Gas Company	17,435
Crescent Tool Company	8,600
Carter Oil Company	39,133
Continental Supply Company	1,344
Export Oil Corporation	15,000
Exchange Oil Company	6,000
Garfield Oil Company	6,176
Gilliland Oil Company	8,660
Gladys-Belle Oil Company	507
Hinderliter Tool Company	10 700
Lone Star Gas Company	21,818
Lake Park Refining Co.	1,175
Marland Refining Co.	14,400
McCaskey & Wentz "Gaso Dept."	24,272
Meridian Gasoline Company	5,786
Mount-Cooper Boiler & Iron Co.	2,100
Mo-Crite Oil Company	1,920
Mulberry Oil Company	4,000
National Products Company	4,728
Northland Gasoline Company	2,820
Oklahoma Natural Gas Company	7,164
Oklahoma Iron Works	48,000
Oklahoma Central Oil Company	5,000
Oklahoma Steel Castings Company	9,600
Phillips Petroleum Company	14,000
Prairie Pipe Line Company	2,376
Parkersburg Rig & Reel Co.	11,536
Pulaski Oil Company	1,792
Superior Petroleum & Gaso. Company	6,200
Sinclair Oil & Gas Company	31 308
Staley, Langford & Chenault	5,010
Tulsa Benovelent Society	7,000
Western Oil Corporation	15,000
Wolverine Oil Company	19,854
Wire Rope Appliance Company	14,740

Fields of the Central West

By Whit

Petroleum Exploration Co. gets 400-bbl. well in Magoffin County, Eastern Kentucky. Union Gas & Oil Co.'s No. 22 Holbrook, North Weir, 80 bbls., No. 4 Laura Skaggs, 30. Western Ohio Oil Co. has 90-bbl. well in Wood County, Ohio; John Mueller 40-bbl. producer in Van Wert County.

FINDLAY, Ohio, Oct. 1.—A general survey of the fields of the Central West fail to show the expected shut down, as the usual number of completions are reported from week to week, and there will not be any falling off until cold weather comes.

The news of the week was the completion of a 400-bbl. Weir sand gusher by the Petroleum Exploration Co., in a test on the Vanderpool farm, in the Magoffin County Field of eastern Kentucky, and the largest producer reported from that end of the State for many moons.

During the week in the old Lima Field of northwestern Ohio, the most interesting completion was the drilling in by the Western Ohio Oil Co. of its second test on the Loose-Walbridge farm, Section 6, Bloom Township, Wood County, and right up against the town of Cygnet. This well struck the top of the Trenton at 1,148 feet and drilled 344 feet in to a total depth of 1,492 feet. In going this depth in the Trenton three crevices were passed through, as well as four pay sands. The writer visited the well on Saturday just as the last screw was run and after bailing there was a nice showing and there was talk of shooting the well, but the scout advised that the well be tested out in a natural manner by putting on the pump without a shot, which was done and was tubed and started pumping on Wednesday. It required about seven hours to get the best of the salt water, after which the well went to oil and for the balance of the day put 90 bbls. of clear oil in tanks, making it an excellent producer for the old territory. No. 3 will be started on this lease within a few days and then operations will start on another lease between Cygnet and North Baltimore, in Henry Township, Wood County.

Deeper Drilling

Deep drilling in the Trenton Rock is going to rejuvenate the old field, especially along the "Hogs Back" or "Sucker-Rod Pool," as it is known, which runs from east of Findlay through Wood County to Waterville in Lucas County, and it looks as though this entire strip, which covers some few miles in width, is destined to be redrilled for the deep pay sands known to exist. The well of the Heackock Oil Co., on the Delia Clark farm, Section 7, Bloom Township, and just southwest of Cygnet, drilled in some several weeks ago, is reported to be making around 60 bbls. a day. Southwest of Cygnet and between that town and North Baltimore, at Lawrence Mills, the Ohio Oil Co.'s No. 37 on the Bass Lawrence farm, Section 23, reported when completed at 33 bbls., has increased until it is in the 100-bbl. class. This well was drilled to a depth of 1,789 feet and over 500 feet in the Trenton.

In Plain Township, Wood County, Murray B. Chidester's No. 13 on the J. D. Halsey, Section 26, pumped 40 bbls. at 1,485 feet, while the Star Oil Co.'s second test on the John Cahill farm, Section 24, Henry Township, is reported to have struck a heavy dose of salt water at a depth of 1,362 feet, but also has a nice showing of oil and should make a good pumper when the water is exhausted some.

One of the important late completions in Wood County was the well of Marshall & McClure on the southwest corner of the C. C. LaPlant, Section 19, Liberty Township, and in advance of production to the west. This well is reported at 30 bbls. from a depth of 1,520 feet.

In Union Township, Hancock County, the Van Lue Oil Co. and Keiser's No. 4 on the Fred Adams, Section 21, pumped 20 bbls.

In Recovery Township, Mercer County, Lowery and others' Nos. 1, 2 and 3 George Miller, Section 19, are reported at 20, 30 and 20 bbls., respectively. In Gibson Township, the Logan Oil Co.'s No. 1 J. Brunswick, Section 24, pumped 15 bbls., and the same company's No. 2 J. Schmidtz, same section, pumped 4 bbls. In Franklin Township, same county, Ed Anderson and others' test on the S. Evans, Section 29, pumped 15 bbls. In Liberty Township, same county, E. A. Kuhns and others abandoned Nos. 1, 3, 5 and 6 James Agler, Section 31. In Union Township, the Watson Oil Co. pulled out No. 2 C. Griffin, Section 12.

In Jennings Township, Van Wert County, John Mueller's No. 7 on his own farm, Section 10, pumped 40 bbls., and the best well yet drilled on the farm. He has abandoned his No. 1 well. In Willshire Township, E. A. Kuhns and others abandoned Nos. 2, 4 and 5 John Medaught, Section 24.

In Brooklyn Township, Cuyahoga County, near Cleveland, the East Ohio Oil Producing & Refining Co. drilled a dry hole on the H. G. Hay, Section 17, at 2,805 feet, or 30 feet in the Clinton formation.

Indiana Field

In Liberty Township, Wells County, in the Montpeiler Field, the Lewis Oil Co.'s No. 9 J. K. Davis, Section 19, pumped 15 bbls. In Nottingham Township, the Ohio Oil Co. has abandoned Nos. 1, 2, 3, 4, 5 and 6 W. H. Chenoweth; Nos. 1, 2 and 3 L. J. Beaver, and Nos. 1, 2 and 3 Charles Shannon, all in Section 24. These are wells that have produced for many years.

In Harrison Township, Blackford County, the Ohio Oil Co. pulled out Nos. 5, 6, 8, 9, 10, 11, 12, 13 and 15 A. Hawkins, and Nos. 2, 3 and 7 H. H. Bennett, all in Section 16. This is also a bunch of old-time pumpers, that got so small the overhead was too heavy to make them worth pumping. Just at present the overhead is such that the small strippers are not producing enough to realize a profit. Where a few years ago pumpers were getting from $40 to $60 a month, they are now holding their work at from $100 up.

In Bear Creek Township, Jay County, Smithers and others' No. 3 W. McMichael's, Section 18, pumped 12 bbls., and the same firm's No. 2 Perry Orr, same section, pumped 3 bbls. In Penn Township, Manor-Stewart & Jones' No. 9 Davis Brothers farm, Section 27, pumped 25 bbls., with No. 10 drilling. C. F. Willson and others are drilling a test on the A. Hetzler, Section 21, same township. In Jackson Township, same county, McCarty & McCarty abandoned Nos. 1 and 3 A. Lupton, Section 31. Karney and others did the same with No. 2 J. Park, Section 12, and J. J. Adams pulled No. 2 C. L. Callahan, same section.

In Hartford Township, Adams County, the Ohio Oil Co. abandoned No. 2 William Gledenning, Section 33, and the Rockford Oil Co. is drilling a second test on the C. J. Jones, Section 30, Blue Creek Township.

In Pleasants Township, Grant County, Nickolson and others are drilling No. 2 on the R. Hildermond farm. In Jefferson Township, Robison & Duckwall abandoned Nos. 1 and 2 J. Jones and No. 3 C. Henline, Section 22, and A. D. Mittank and others pulled Nos. 1, 3, 4 and 5 Mirtank, Section 21.

Illinois Field

Quietude prevails over the old Illinois Field and very few wells are drilling in Clark, Cumberland, Crawford and Lawrence Counties, the main stem of the Field. Wabash County has dropped off until only a couple of strings of tools are working, although there are a number of rigs up. In Wabash Township, of this county, Ulan Bowers and others failed to find a pay sand at around 1,650 feet at a test on the S. C. Couch, Section 5, and it developed into a dry hole. One of the same kind was found in Section 13, Friendsville Township, same county, by Hartman & Parrott on the F. M. Ziegler.

In Dennison Township, Lawrence County, the Ohio Oil Co.'s No. 15 E. H. Shuey, Section 6, developed into a 5-bbl. pumper, and the same company abandoned No. 33 T. I. Gould, Section 35, and the Big Four Oil & Gas Co. is drilling No. 18 L. M. Seed, Section 21.

In the southwestern portion of the State in Jackson County, a well is drilled in now and then that makes that field look more inviting. The development of this field was started some years ago by W. W. Husband of Murpheysboro, and the work was done by the Mid-Egypt Oil & Gas Co. that made a good success in the opening of an interesting gas field from which gas is found to supply several towns in that section. This company just drilled in a fine gas well on the Garver farm, Section 1, Bradley Township, also No. 6 on the Carter farm, Section 12, the former extending the producing field some distance. A well is now under way on the McBride farm, also in Section 12. This company, according to reports, has arranged to drill a second test on the Gerberding farm, Section 14, Bradley Township, where it is predicted oil in commercial quantities should be found, and if so, it will extend the oil producing area to a great extent. Some years ago a well was drilled on this farm, and 13 feet of good looking sand was passed through at a depth of 855 feet, but in drilling deeper a heavy flow of salt water was encountered at 1,000 feet. The owners were unable to shut off or exhaust the water and the hole was properly plugged.

The Petroleum Exploration Co. opened the eyes of the eastern Kentucky operators when it drilled in its initial well on the D. J. Vanderpool farm, in Magoffin County, estimated at 400 bbls., and one of the largest wells yet reported from the Weir sand. It is in the South Weir Field and will naturally bring about a more active drilling campaign, if weather conditions remain good long enough so operators can get out material, which is one of the most expensive parts of development in that section, so far removed

(Continued on Page 191)

Pennsylvania-West Virginia

By D. S. WAKENIGHT

PITTSBURGH, Pa., Sept. 30.—The week of development work in the Eastern Fields proved the least satisfactory of any this year. Fewer wells were completed and the new production was much smaller than the preceding week. The month just closed showed fewer wells completed and considerably less new production than August. The poow showing in completed work was not much worse than the new work under way and starting. In no part of the Eastern producing area is there the least activity except in the gas territory in several West Virginia counties. The new production for the entire State for the month amounted to only 230 bbls., all from the old defined districts.

The only sensation of the week in the Eastern fields came when the Manufacturers Light & Heat Co. drilled its second test on the William Auld farm, near Prosperity, Morris Township, Washington County, in the Gordon sand. For a time it looked like a near gusher. After pay had been tapped it produced 225 bbls. in less than 24 hours. The well then stopped flowing and has made but one flow in the past three days. When the well filled up and flowed, drilling was suspended to move back boiler. It was found that some repairs would have to be made on the boiler before the well could be agitated or drilled deeper. Its status as a producer will be determined when it has been drilled deeper. In Springhill Township, S. W. Meales & Co.'s second test on the Mahala Rice farm, completed two weeks ago, has declined from 100 to 40 bbls. a day. In the same township, the Herods Run Oil & Gas Co.'s test on the Jefferson Dye farm is a gasser in the Big Injun sand. In Rich Hill Township, the Natural Gas Co. of West Virginia has a gasser in the salt sand at a test on the H. Hewitt farm. In Gilmore Township, the Philadelphia Co.'s second test on the Joseph Main farm has been drilled to the Speechley sand to a total depth of 3,725 feet. It is a fair gasser. In the same township, the Carnegie Natural Gas Co.'s test on the Harry E. Rice farm is a gasser in the Gordon sand.

Test Work in Greene County

Greene County has more work under way and starting than any in the Southwest. In Gilmore Township, the Garrison Oil & Gas Co. has started to drill a test on the J. W. Mason heirs' farm. In Springhill Township, the Fips Drilling Co. is rigging up on the Peter Bradley farm. Boundy Bros. have started to drill on the George Keffer farm and the Fox Hill Oil & Gas Co. is due in the sand on the Perry Taylor farm. In Plum Township, Allegheny County, the Peoples Natural Gas Co.'s second test on the James Armstrong farm is a gasser. The same company is due in the sand on the Margaret E. Morrison farm. In McCandless Township, Shaffer & Co.'s test on the Sarver heirs' farm is a small gasser. The American Natural Gas Co. got a gasser at a test on the W. Vandevoit farm.

The test wells on Indian Fork, Grant

(Continued on Page 191)

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Mexia, Texas	Slick, Okla.	Yale, Okla.		
Mildred, Texas	Beggs, Okla.	Wilson, Okla.		
Graham, Texas	Haskell, Okla.	Duncan, Okla.		
Breckenridge, Texas	Barnsdall, Okla.	Tonkawa, Okla.		
Electra, Texas	Pawhuska, Okla.	Wirt, Okla.		
Burkburnett, Texas				

California Field Operations

By L. P. Stockman

Associated Oil Co.'s No. 3 Clark, Santa Fe Springs, 4,200 bbls.; Union Co.'s No. 4 Howard, 4,500: Julian Petroleum Co.'s No. 6, 3,000 bbls. General Petroleum Co.'s No. 3 Clock, Long Beach, 3,150 bbls.; Mack Trust's No. 1, 3,000 bbls. Shell Co.'s No. 7 Alamitos, 3,000. U. S. Royalties No. 9 Torrance, 3,000.

LOS ANGELES, Calif., Sept. 28.—General conditions in California do not show any material improvement, except possibly in the flush fields where the gas is passing off quite rapidly. There is very little question that the over drilling in the town lot area at Santa Fe Springs has resulted in a rapid decline in the wells in that immediate vicinity. Should the field continue to decline at the same rate it has during the past two weeks it will be well under the 300,000-bbl. mark before the close of October.

Long Beach, on the other hand, is establishing new production records, due chiefly to deep drilling. Because the deep sands in this field have only been tapped and, since there is practically no edgewater in this deep zone, no immediate decline is expected. The policy of late has been to pass up the upper zones and drill directly to the deep zone because of its larger production and comparative freedom from water. Many wells formerly producing from the upper sands are being carried down and the field production is reacting accordingly.

Future Fields

While many well informed operators are predicting rapid declines at both Long Beach and Santa Fe Springs, the potentiality of the deep sand at the former and the possibility of opening up another deep sand at Santa Fe Springs must not be lost sight of. Those who have gone so far as to predict that the industry will be drawing on stocks at the close of 1924 discount the present field at Torrance and the new field at Compton. Undoubtedly, Torrance will have a substantial production at the close of 1924, and those who have figured the new Compton Field as being limited in area to the hill are liable to find themselves mistaken. Should the Union Oil Co.'s Rosecrans well come in, it will open up another town lot area and there is a possibility of another over-drilled field. It is also reasonable to suppose that there will be a more productive sand at Compton deeper than the sand at 4,000 feet, which is producing at present. If leases are all held in large blocks by the major companies its production can be regulated.

There is also a possibility of another deep sand at Torrance in this new area opened up recently. While most of the marketing companies look for a very much smaller production soon, the question naturally arises as to just how long this condition will prevail if it comes about. For several years at least one new field has been opened up each year and judging by the large amount of wildcatting being done, is it not possible that another field will be opened up early in 1924? If another field should be opened up, and there are some very promising areas at present, it would prolong the present period of high production. Because of the large amount of oil taken out of the present large fields, production must eventually drop; of this there is no doubt. It is only a question of what the decrease will be.

Santa Fe Springs

There are still approximately 150 wells drilling at Santa Fe Springs and, unless about 20,000 bbls. a day of new production is brought in each week, the output of this field will continue declining with the possibility that it may not be producing over 250,000 bbls. a day at the close of the year. This will be a drop of approximately 75,000 bbls. daily within the next three months and, while this decrease seems rather large at the present time, if the output of new wells declines in the same proportion that the older ones have, it is not excessive. Completions during the current week are of particular importance because they illustrate the fact that the initial production is gradually becoming smaller and also that the gas pressure is showing a corresponding decrease.

The Associated Oil Co. completed the largest new well put on production during the week by bringing in No. 3 Clark. This well was drilled to 4,670 feet and came in flowing 4,200 bbls. of clean 35.1 gravity oil. It was completed with a 6¼-inch oil string and is flowing through a 1-inch bean under a pressure of 475 pounds. The Associated's No. 6 Clark, which was put on a production test last week, was killed because of apparent bottom water and is being plugged back. The production test showed this well to be doing 4,000 bbls. of fluid, over 60 per cent water.

The General Petroleum Co. put two wells on production, one, No. 13 Santa Fe, a new well, and the other, No. 1 Jalk, a recompletion after being redrilled and deepened. Number 1 Jalk was returned to production doing 750 bbls. daily after being cleaned out and deepened to 4,600 feet. The oil from this well is clean and tests 34.2 degrees. Number 4 Jalk, on the same property, was turned loose for a short time and flowed into the sump at the rate of about 1,000 bbls. daily. Final preparations are being made to bring this well in and it will probably be completed within the next few days as a good producer. The General Petroleum Co.'s new well, No. 13 Santa Fe, was brought in from 4,630 feet and its initial production was slightly less than 1,000 bbls. It was completed with a 4½-inch oil string set at 4,620 feet and the oil, which tests 33.8 degrees, is clean.

Union's Sixth Completion

For the fourth consecutive week, the Union Oil Co. increased its production by bringing in at least one new well. Number 4 Howard, the Union's new well during the current week, is the company's sixth completion in this field during the past month. Number 4 Howard was brought in from 4,700 feet and showed an initial production of 4,500 bbls. The oil, which is flowing through a 1-inch bean under a pressure of 500 pounds, is clean and tests 34.3 degrees. The Union has about 15 other wells drilling and the policy of this company in bringing in its wells over a long period, instead of during one or two weeks, permits its engineers to compute and erect the necessary amount of storage. This policy has proved very advantageous and during the recent period of pro-ration the Union Oil Co. was not as severely pressed for storage as were some of the other companies.

The Standard Oil Co. did not bring in any new wells, but its deep test, No. 2 Brownrigg-Keller, made 55 additional feet of hole, the log showing the formation to be a sandy brown shale at 7,185 feet. The Shell Oil Co. brought in one new well, No. 4 Slusher, completed at 4,669 feet, with an initial production of slightly more than 1,000 bbls. The oil, testing 33.5 degrees, is flowing through a ⅞-inch bean under a pressure of 500 pounds. The Fred B. Foster Co. put No. 50 on a production test during the early part of the week and the result showed it to be doing about 400 bbls. a day. The well was later killed and it will be deepened from 4,300 feet, its present depth, to 4,600 feet in the hope of securing larger production. The Julian Petroleum Corp. completed well No. 6 during the latter part of the week from 4,650 feet and increased its production 3,000 bbls. a day. It was completed with a 4¾-inch oil string, and the oil, which tests 33.6 degrees, is flowing through a 1-inch bean under a pressure of 450 pounds.

Wells Look Doubtful

A check of field developments during the week shows several wells which look very doubtful. The B. G. C. Oil Co. has passed the 4,800-foot mark and it would not be surprising to see this company suspend operations in the very near future. The Fisher-Gregg Syndicate No. 2, well No. 1, has also passed the 4,800-foot mark and, inasmuch as this well has never shown any encouragement, it too will probably be abandoned. The Central Oil Co.'s north line well, which has been held up for some time with a difficult fishing job at 4,925 feet, was shot at 4,000 feet and the company is making preparations to plug and abandon. The Fred B. Foster Co. also had a well, No. 2 Yankee at 4,802 feet, which has been standing for some time and it looks quite doubtful. The Grunwell Oil Corp. which has just finished a dry hole, is making preparations to abandon its well No. 1 drilled to 4,731 feet. A slight showing was noted at 4,685 feet, but on a test the well showed only a small amount of oil, the greater percentage of which was salt water. As a result of this test, the well is being plugged and abandoned. The Luneta Oil Co. drilled out the cement plug in the 6¼-inch, set at 4,591 feet, and the well flowed approximately 200 bbls. of salt water. The total depth of the hole is 5,058 feet and, before abandoning, the company will recement and make another test.

The Pacific States Oil Co., after drilling to 4,517 feet, has suspended drilling operations in its well No. 1 because of financial difficulties. The well will be allowed to stand pending nearby development work, and, should developments warrant further drilling, the company will be refinanced and the well carried on down. Howland & Hopkins have experienced an unusual amount of hard luck in their two wells, No. 1 being held up with a fishing job at 4,339 feet and No. 2 being delayed at 4,500 feet. The latter well has been held up for two months fishing for a bit and its recovery during the past week will permit the company to proceed. In contrast to these reverses there are several companies expecting production within the next week. The Mohawk Oil Co. is getting ready to return No. 1 Batson to production after deepening it to 4,720 feet. A 4¾-inch oil string has been set at 4,700 feet and the well should be on production shortly. The Petroleum Midway Co. set a 4¾-inch oil string at 4,721 feet in well No. 3 on Mattern lease No. 2 and preparations are being made to bring in a good producer. Well No. 2-A

(Continued on Page 201)

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Following is a list of tankers, date departed, destination, kind of cargo and amount in barrels:

J. M. Danziger, September 17, New Orleans, crude	75,000
James Magee, September 18, New York, crude	108,000
Cerro Azul September 18, New Orleans, crude	90,000
Agwisun, September 18, Baltimore, crude	75,000
J. N. Pew, September 18, Philadelphia, crude	95,000
Devolente, September 18, Boston, crude	75,000
F. Q. Barstow, September 19, New York, crude	110,000
Walter Jennings, September 19, New York, crude	112 000
W. S. Rheem, September 19, New York, crude	90,000
J. A. Moffett, Jr., September 20, New York, crude	110,000
Beaconlight, September 20, Boston, crude	75,000
T. J. Williams, September 20, New York, crude	85 000
Alameda, September 20, New York, crude	75,000
Mevania, September 21, New York, crude	70,000
W. M. Irish, September 21, Philadelphia, crude	80,000
Harold Walker, September 22, New Orleans, crude	75,000
E. L. Doheny Jr., September 22, New Orleans, crude	95,000
Wm. Rockefeller, September 22, New York, crude	112,000
Frederick R. Kellogg, September 22, New Orleans, crude	65,000
Export	
Beiridge (Nor.), September 18, Japan, fuel	60,000
Yorba Linda, September 18, Tokuyama, fuel	65,000
Coastwise	
R. J. Hanna, September 17, Richmond, crude	80 000
La Purisima, September 18, San Diego, refined	10,000
Hulaco, September 18, Avon, crude	80,000
Frank H. Buck, September 18, Avon, crude	65,000
K. R. Kingsbury, September 18, Richmond, crude	85,000
Cathwood September 19, Martinez, crude	75,000
Lubrico, September 20, Richmond, crude	80,000
La Placentia, September 20, Oleum, crude	75,000
Montebello, September 20, Martinez, crude	75,000
Wm. F. Herron, September 20, Avon, crude	50,000
Trimountain, September 20, Seattle, fuel	55 000
La Purisima, September 20, Portland, refined	25,000
Lebec, September 21, Martinez, crude	7 ,000
Paul Shoup, September 21, Avon, crude	80,000
W. S. Miller, September 21, Richmond, crude	75,000
R. J. Hanna September 21, Richmond, crude	78,000
K. R. Kingsbury, September 22, Richmond, crude	85,000
Los Alamos, September 22, Puget Sound, refined	25,000
Mojave, September 23, Martinez, crude	70,000
Hulaco, September 23, Avon, crude	78,163
El Lobo (Br.), September 23, Vancouver, crude	50 000
From San Francisco	
El Segundo, September 19, Seattle, refined	30,000
Charlie Watson, September 19, Point Wells, refined	15,000
J. A. Moffett, September 20, Astoria, fuel	60,000
Anomia (Br.), September 20, Balboa, fuel	50,000
Franklin L. Lane September 21, Pearl Harbor, fuel	70,000
Gargoyle, September 21, Philadelphia, refined	75,000
Atlas, September 22, Greys Harbor, refined	15,000
Capsa (Br.), September 22, Balboa, fuel	50,000
D. G. Scofield, September 23, Point Wells, fuel	65,000
Liebre, September 24, Seattle, fuel	60 000
From Port San Luis	
Deroche, September 17, Vancouver, crude	70,000
Dilworth, September 21, Honolulu, fuel	70,000
Santa Maria (Br.), September 24, Balboa, fuel	60,000

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News of Mexican Oil Fields

By George Blardone

Penn Mex Fuel gets 3,500-bbl. well, flowing by heads, in No. 21, Alamo Pool. La Espuela Oil Co.'s No. 2, Lot 45, Paciencia de Aguacate, Topila, is making 250 bbls. through a choker. Panuco prices slump considerably. Isthmian operations are not encouraging.

TAMPICO, Mex., Sept. 28.—Penn-Mex Fuel Co. scored a 3,500-bbl. well in its No. 21 Alamo, which is a completion at a subsea level of 2,087 feet, a normal depth for producers in the Alamo Pool. The well flows by heads. Two other South Fields tests have been abandoned as failures. They are: International Petroleum Co.'s No. 7 Agua Nacida, at 2,568 feet, located southwest of Penn Mex' Alamo Pool, and Cortez Oil Corp.'s No. 4 Aguada, which is a duster at 4,005 feet.

At Panuco the following completions are noted: International Petroleum Co.'s No. 17, Lot 4 Cacalilao, is a completion at 2,572 feet, virtually a failure, although it will heads 50 bbls. from an upper stratum, Barnett & Ray, No. 6, Lot 1 Cacalilao, (2-B), is a duster at 2,260 feet. Hudson and others' No. 13 West Maguabes, is also a duster at 2,210 feet. Mexican Sinclair Petroleum Corp.'s No. 17, Lot 3 Cacalilao, is a dry hole at 1,902 feet, the drill stopping in the Tamasopa limestone.

In the Topila Pool, La Espuela Oil Co., No. 2, Lot 45 Paciencia de Aguacate, will make about 250 bbls. through a choker, the drill stopping at 2,397 feet.

Panuco Crude Prices

With the completion of a number of wells in Lot 1, Cacalilao, of the Panuco district, (previously reported), this lot being the one in which most of the wells are being drilled by small operators, the price of Panuco crude has slumped considerably, although not as much as has been indicated by some publications in the United States. The latest authentic sale, (10,000 bbls. the day), that is in hand is a price of 35 cents U.S.C. f.o.b. terminals at Tampico, which, it is said, scales, 23 cents U.S.C. well head. To the price of 35 cents U.S.C. the barrel, f.o.b. terminal Tampico, might be added, for export oil, some 23 cents U.S.C. the barrel, which will contemplate terminal charges and government taxes. This means, conservatively stated, a price say of 58 cents U.S.C. the barrel, net over the bar at Tampico, export bound. This latter figure of course is based entirely on the figure for the private sale of the oil in question; and while, de jure, it might be considered "the market," de facto, it does not follow that this base sale price can be duplicated. It will be recalled that all local sales here are a matter of private trade and barter, each trade, therefore, standing alone as to price and conditions.

Fields in General

In the South Fields, the currying over of the older Chinampa-Amatlan sectors grows apace. Huasteca Petroleum Co., (Mexican Petroleum) is rigging up for two more tests in the Juan Casiano sector of the Upper Chinampa; and Mexican Eagle Oil Co. is drilling one test in Upper Chinampa; and is active with two more tests in its Los Naranjos sector in Upper Amatlan, and is rigging for another test in Lower Amatlan. Island Oil & Transport Corp., is waiting for permit for a test in Lot 96 Chinampa, and there is a possibility that permits will be asked in the near future for two or three more tests by others in the stripper sectors under discussion.

Field operations in the South Fields during the past week are best described as follows: Huasteca Petroleum Co., (Mexican Petroleum), No. 29-A Cerro Azul, is drilling in blue shale with shell traces at 871 feet; No. 34, same, drilling in a sandy shale with a showing of pyrites at 1,740 feet. In Tierra Blanca, No. 7-B is drilling in gray shale at 1,925 feet; No. 13-A, same, drilling in the San Felipe at 2,389 feet; No. 19-A cemeted 10-inch in a hard gray shale at 1,883 feet, and No. 20, same, drilling in brown shale at 1,310 feet. In Tres Hermanos, Huasteca's No. 3-A cemented 10-inch in a shell at 2,470 feet, and No. 6 there drilling in brown shale at 2,115 feet. In Moralillo, Huasteca's No. 1-A is drilling in shale with shell traces at 3,652 feet. In the Juan Casiano sector of Upper Chinampa, Huasteca's No. 10-A is rigging; No. 12-A testing cemented 8-inch at 1,962 feet, and No. 13 rigging. All operations in the Juan Felipe sector have been temporarily suspended.

Mexican Eagle Oil Co's No. 7 Palma Sola, is drilling in a brown and green shale at 2,147 feet, and No. 8, same, in gray shale at 908 feet. In its Los Naranjos sector, in Upper Amatlan, Mexican Eagle's operations follow: No. 24, Lot 132, drilling in brown limestone at 2,168 feet; No. 28, Lot 125, running 6-inch at 1,780 feet, in shale; No. 29, Lot 131 Chinampa, ready to spud. In Lower Amatlan, No. 24, Lot 198, is rigging; and in Upper Chinampa, No. 5, Lot 163, rigging standard at 1,885 feet. International Petroleum Co.'s No. 37 Toteco, (previously reported as a big gasser with some oil), is making 2,450 bbls.; No. 38, same, drilling in a brown shale at 2,338 feet, too deep for much hope. Island Oil & Transport Corp.'s No. 4, Lot 176 Amatlan, is drilling in hard rock at 1,077 feet; No. 6, Lot 177, spudding. Mexican Gulf Oil Co.'s No. 2, Lot 185 Santiago de la Pena, south of the Tuxpam River, is drilling in gumbo at 2,625 feet, another test apparently too deep; No. 45 Toteco is clearing location. Mexican Sinclair Petroleum Corp., No. 2, Lot 331 Amatlan, is drilling in blue shale at 2810 feet. Penn.-Mex. Fuel Co.'s No. 2 Palo Blanco, is drilling in blue shale at 2,050 feet, and No. 2 La Pita is rigging.

Panuco-Cacalilao

In the Cacalilao sector of the Panuco Pool, drilling operations are: La Carona Petroleum Co.'s No. 22, Lot 4, has cemented 8-inch in the San Felipe at 1,250 feet; No. 29, Lot 1, drilling in gray lime at 1,460 feet; No. 42, Lot 4, drilling in pink shale at 120 feet; No. 38, Lot 4, drilling in gray shale at 1,020 feet; No. 31, Lot 1, cemented 8-inch in lime shells at 1,110 feet, and No. 43, Lot 1, rigging standard. Credito Petroleum Co., No. 19, Lot 1, is drilling in limestone at 1,675 feet. Kone & Willis, No. 2, Lot 1, (2-A), is running 10-inch at 1,226 feet, in the San Felipe; No. 8, same lot, (2-C), drilling at 1,075 feet in blue shale. Mexican Gulf Oil Co.'s No. 33, Lot 1, Cacalilao, (4-C), is drilling in shale at 1,240 feet; No. 35, same, rigged and waiting for permit. Mulcahey and others No. 5, Lot 1, (1-C), is drilling in the San Felipe at 1,575 feet; and No. 8, same, waiting for water at 2,065 feet. International Petroleum Co.'s No. 26, Lot 5, is drilling in brown limestone at 2,425 feet. Mexican Sinclair Petroleum Corp., operating in Lot 3, is drilling as follows: No. 11 at 1,190 feet in the San Felipe; No. 13 at 1,300 feet in the same formation; No. 14 at 325 feet in blue shale; No. 27 at 1,615 feet in limestone. Rich Mex. Oil Co's No. 3, Lot 1, (all in 4-B), is rigging standard; No. 6, same, drilling in limestone at 2,025 feet; No. 9, drilling in limestone at 2,020 feet, showing about 100 bbls.; No. 11 cementing 8-inch at 1,160 feet in the San Felipe; No. 13 rigging standard; No. 20 drilling in shale at 810 feet. Venable and others No. 5-A, Lot 1, (2-B), is cementing 8-inch in the San Felipe at 1,218 feet. Transcontinental Petroleum Co.'s operations in Lot 4 are as follows: No. 26 drilling in shale at 1,000 feet; No. 27 drilling in the San Felipe, with the hole full of oil, at 1,690 feet; No. 30 drilling in the San Felipe with a showing at 1,770 feet, and No. 34 drilling in shale at 325 feet.

Panuco Old Sectors

In the older Panuco sectors, operations are as follows: La Corona Petroleum Co.'s No. 2 Caposo, drilling in gray limestone at 2,705 feet, too deep for hope now; and No. 66 Salvasuchi, running 8-inch in gray limestone at 1,250 feet. East Coast Oil Co.'s No. 8 Palangana, drilling in a broken limestone at 2,020 feet, and No. 429 Ingenio spudding. Vera Cruz Mexican Petroleum Co., No. 1, Lot 1 Buena Vista (E. M.), drilling in shale at 875 feet. Mexican Gulf Oil Co.'s No. 9 Lopez, drilling in shale at 650 feet. International Petroleum Co.'s No. 6 Tanchicuin, drilling in a white limestone at 2,610 feet, neither the depth nor the formation being very hopeful, while No. 7 there is in blue shale at 1,120 feet, and No. 8, same, is in gray shale at 750 feet. Mexican Atlas Oil Corp., No. 4 Juarez, is drilling in limestone at 1,210 feet. McGinness and others, No. 9 Halcon, drilling in shale at 1,925 feet. New England Fuel Oil Co.'s No. 5 Cruz, drilling in shale at 1,560 feet. The National Lines Federal Zone No. 3 Salvasuchi, is drilling in shale at 1,160 feet; No. 4 Halcon, same, in shale at 1,710 feet, and No. 5, same, is a derrick.

At Topila

Operations in the Topila Pool are dragging. Of some interest will be the East Coast Oil Co.'s deepening of its old Nelson test, (No. 506), which has been standing for a number of years, unfinished at 2,058 feet. It is rigged to drill in and waiting for permit. This test is on the south bank of the Topila estero, south and west some distance from production as at present defined in the Topila Pool. The drilling in of this test is another indication of the "combing" going on for possible production. In the Paciencia de Aguacate sector, Credito Petroleum Co., No. 2, Lot 1, is drilling in gray limestone at 2,335 feet, and No. 3, Lot 9, in the San Felipe at 1,810 feet. Out at Loma del Pozo, Mexican Sinclair Petroleum Corp.'s No. 2, which has been gassing and spraying and cutting up generally for a long while at 3,102 feet, in the San Felipe limes, has bridged. In the Quebrache, nearby, National Oil Co., No. 1, Lot 173, is commencing to look for a seat for its 10-inch around 2,700 feet, where the drill is now in gray shale. Globe Petroleum Co., No. 3, Lot 174, same, is preparing to drill up plug at 2,700 feet, where it cemented 10-inch in hard gray shale, and No. 4 is drilling around 600 feet in shale.

(Continued on Page 180)

News from Fields of Canada

By Victor Lauriston

CHATHAM, Ont., Sept. 29.—C. O. Stillman, president of Imperial Oil, Ltd., states that no definite decision has been reached by that company regarding the future operations in the Fort Norman area. While all drilling crews have been withdrawn for the winter, this is not to be interpreted as meaning the final abandonment by the company of its northern enterprise. The directors will not reach a final decision till they have fully studied the report of Angus Sutherland,, drilling superintendent, in charge of the development.

In east-central Alberta, British Petroleum's No. 2, Section 30-46-6w-4 struck a heavy gas flow at 1,925 feet, corresponding to the flow in No. 1 at 1,864 feet. No. 2 is located 500 feet east and on higher ground, and has been drilling since July 16. No. 1 was finished at 2,012 feet after drilling through the gas sand, but it is planned to carry No. 2 below this sand into the supposed oil structures. Imperial Oil, Ltd., Grattan No. 2, Section 14-45-8w-4, is below 1,900 feet and running double tower. This test is reported through the gas and bringing up some traces of oil, but no commercial production is claimed yet.

At Pigeon Lake, west of Wetaskiwin, Mutual Oil & Gas Co., Section 14-47-27w-4, is reported drilling between 1,000 and 1,100 feet, and has encountered several fair gas showings but no oil, though the test was based on the expectation of oil between 700 and 1,200 feet. Drilling is being continued.

R. H. Weaver, drilling on the Isidore Paradis farm, at Daugh, Section 4-55-25w-5, 14 miles northeast of Edmonton, encountered a considerable gas production at 406 feet accompanied by a heavy water flow. The gas is apparently a pocket in the Edmonton formation, and the water and gas come from different levels. Considerable filing has been done on adjacent territory.

In Okotoks Field

In the Okotoks Field, southwest of Calgary, Royalite Oil Co. No. 4, Section 7-20-2w-5, is reported to have struck wet gas around 2,700 feet, estimated at 1,700,000 feet a day. The Royalite Oil Co., which already has three wet gas producers, including the old Dingman discovery well in this field, is a subsidiary of Imperial Oil, Ltd.

In Sweetgrass district, southern Alberta, Canadian Oil & Refining Co. (Rogers) Section 29-1-11w-4 has been cleaned out to 1,000 feet and is running 12½-inch casing preparatory to going deeper. To the west, south of the international boundary, the Spartan-Chamberlain test is reported to have encountered wet gas; this has been cased off and drilling is being continued at 2,500 feet. Crude oil from the Kevin-Sunburst Field is being extensively used for fuel purposes by threshermen in Coutts, Milk River and Warner districts of southern Alberta. J. H. Frazier and associates of Calgary, have purchased a 40-acre tract in Section 30-35-1w, from the C. L. Emmons Syndicate and will begin drilling in 30 days, as a diagonal offset to the Empire-Montana producer. Near Shelby, Canadian-American No. 2 is reported spudded in as an offset to No. 1, which claims a 30-bbl. production.

(Continued on Page 184)

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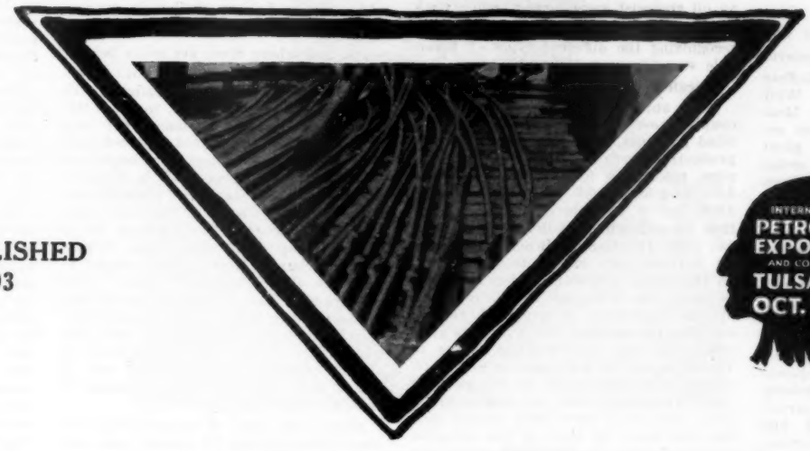

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Work of Geologists is Most Important

Hunting For Anticlines But Small Feature of Duties. Keeping Operators Out of Unfavorable Regions Another Phase.

By K. C. Heald
Geologist in Charge of the Section of Geology of Oil and Gas Fields, United States Geological Survey.

Has oil geology kept pace with the developing petroleum industry? Consider present-day drilling methods and appliances which bear only a general resemblance to those of the Ruffner Brothers, who drilled for brine in West Virginia more than 100 years ago. Modern tools and operating methods resemble the early ones only as a giant redwood resembles some pygmy cedar fit for a child's Christmas tree. Once men made themselves into beasts of burden and laboriously carried on their backs the oil they had patiently skimmed from some seepage, every drop of which stood for a thousand barrels that in the future would be distributed through systems of pipe lines, tank cars and tank ships, which the ancients would have considered far less possible than unicorns, fire-breathing dragons, and seaserpents a mile long. The development of refining and marketing petroleum products is perhaps a still more marvelous story. Men have labored and dreamed, theorized and experimented, and there have resulted such miracles as the various cracking processes, desulphurizing methods and the casinghead gasoline industry.

If geology, in its application to the oil industry, is to keep pace with the progress of other phases of the industry, geologists must do more than complacently point to past achievements. Judging from their activities of the last four years, they will do more. But the responsibility does not lie on them alone. They must have the ungrudging and understanding support of oil operators, just as that support was given to the technologists while they learned through failures and partial successes what the essential truths were. The geologists must be encouraged to develop their science, and to ceaselessly strive through study, thought and experiment to learn those secrets, many already suspected but few actually proven, which will permit them to replace shrewd guess with certainty, assumption with fact, hypothesis with proof, and to serve the oil industry more effectively than any industry has been served by any science.

The Geologist's Opportunity

At present news of the discovery of a field is not a signal for rejoicing in the industry, but few oil men are so near sighted and slow witted that they fail to see that the present glut in the market is temporary in nature. What goes up must come down, be it a stone thrown into the air or the output of a newly discovered field. Even balloons reach limits beyond which they cannot rise. It has been pointed out that two of the remarkable things about the California fields which have disgorged this flood of oil are the rapidity with which the acreage is being drilled, and the precipitous rate of decline of individual wells. New discoveries will be needed and badly needed, and they must be made by the geologist, who will have to work as he never worked before, and manifest skill and judgment of the highest degree.

Some operators, and, regrettably, some geologists, believe the sole function of the oil geologist is to find an anticline, or other structural feature apparently suited to bring about the accumulation of oil. To limit a geologist to hunting anticlines is about as intelligent and efficient as it would be to limit gasoline engines to propelling airplanes—a good use but by no means the only one to which they should be put. Even if such a limited conception of the function of an oil geologist were correct, much work must be done before all the rules for recognizing the different types of favorable structure can be established.

Neglect of Geological Discoveries

Some anticlines are so prominent they could almost be recognized as such by a blind geologist, but others that are now productive were so obscure that they were passed by for many years. The Los Angeles Field was discovered in 1892, but it was almost 30 years later that the adjacent anticlinal folds at Signal Hill, Huntington Beach and Santa Fe Springs were proved to contain oil. In Oklahoma it took geologists six years to locate the Tonkawa Pool after Fath of the Geological Survey had pointed out that the regional structure was anticlinal. In the Gulf Coastal region of Texas almost no new discoveries of salt domes have been made in the past 10 years (although fields on domes previously discovered have been opened during that time) in spite of the intensive geological study to which the region has been subjected. There is much to learn about the way anticlinal structure affects the surface of the ground; whether it will result in the formation of hills as at Signal Hill and Montebello, Calif.; whether a valley will carve its way into the crest of the structure as at Salt Creek, Wyo., and many other Rocky Mountain anticlines or whether it will manifest itself in some more obscure way.

Many Lines of Research

After an anticline is found the geologist has yet to reach a conclusion as to its significance. Will oil be present at all? Will it underly the entire anticline, or only some favored part of it? Will the crest of the fold in the oil sands vertically underly the crest of the fold shown in the surface rocks, or will it be one side or another of the surface crest, as in the Cushing Field and the Pershing Field in Oklahoma? How deep will it be justifiable to drill in the search for oil? In fact, questions multiply with such astounding rapidity that it is justifiable to doubt that any one science, even such a broad one as geology, can answer them all.

It is quite as important for the geologist to keep the operator out of unfavorable regions as it is to guide him into promising ones. There are districts such as southern LeFlore, Lattimer, Pittsburg and Coal Counties, Oklahoma, where the rocks are similar in general nature to those in the oil fields to the north, and where there are many beautifully developed anticlines, but where the possibilities of oil are negligible. Oil may once have been there, and a little oil may remain, just as some hardy twig in a blight-smitten orchard may defiantly bear fruit, but chances for important commercial production of oil in a region that has been through the changes that have affected the rocks of the areas cited are no better than the chances for a bumper crop from this same blight-struck orchard. How is the geologist to recognize these "hopeless" areas? The researches of David White of the United States Geological Survey have provided a key for regions that contain coal, but criteria for determining in advance of drilling whether an area where coal is absent is possibly oil bearing remain to be found and utilized.

Many other lines of research that are much needed could be pointed out, but the moral is quite plain. Although geology has been successfully employed by the oil industry—and some who have been overwhelmed in the deluge of oil doubtless feel it has been altogether too successful—this success is only comparative. It suffices for the present, but future needs can be met only by a type of geology that will far surpass the science as it is now developed. This means research. The few undermanned and underfinanced organizations that seem particularly suited to carry on this research can not be counted on to meet all the needs and answer all the questions of the oil operators and the geologists associated with them. Oil operators who are financially able should not only countenance, but should urge upon selected geologists in their employ investigations that have as their object the promotion of knowledge regarding oil geology rather than possible immediate returns, and the oil geologist, on his part, should let no opportunity pass to add, through study, through experiments, through conference with other geologists, and through the published presentation of results, to the fund of knowledge that must be available if new fields are to be steadily discovered and America's output of oil is to be maintained.

One of the places where geologists work

Senator Phipps Told Miners of Oil Shale At Mining College

MILWAUKEE, Wis., Oct. 1.—One of the outstanding features of the annual convention of the American Mining Congress here was the presentation by William G. Russell, mining engineer of Denver, on behalf of United States Senator Lawrence C. Phipps of Colorado, of a paper on the potentialities of the oil shale industry.

Senator Phipps stated that Colorado alone contains 900,000 acres of oil shale capable of producing 67,500,000 barrels of oil. The government, according to the Senator, has set aside as a naval reserve 45,445 acres of shale land in Colorado capable of producing from 12 different workable strata alone 185,000 barrels an acre in addition to an enormous amount of ammonium sulphate, which is useful as fertilizer.

In referring to the present status of the oil industry, Senator Phipps' message said that the country is undoubtedly draining the natural reservoirs of all oil and with increased demands it may be only a comparatively short time until the nation will be compelled to turn elsewhere in order to meet the requirements.

"While it is possible that new and larger producing oil fields may be discovered," the Senator said, "its more than probable, within the next decade, we shall have to rely on the refining of oil from shales in order to supply the increased demands for oil."

MODEL OIL DERRICK EDUCATES EMPLOYES

A model oil derrick with every part of it distinctly labeled has been placed on exhibition in the corridor of the central office of the Empire Co.s in Bartlesville, Okla., for the purpose of educating the employes of that company in the practical use of the derrick.

The derrick stands about eight feet high, and shows how each and every part is operated. There is always a group of employes standing around the derrick inspecting it and obtaining valuable information on its operations. This information is generally given out by some employe in the office who has had years of practical experience in the field.

It is believed that every man and woman in the large office building at Bartlesville will be thoroughly acquainted with the operations of an oil rig when this derrick is moved from the building.

TEST REPORTED AT ELKO, NEV.

An unconfirmed report from Elko, Nev., is to the effect that the Elko Oil Development & Improvement Co. of Elko is drilling at 2,375 feet in black slate "interlined with a carbonaceous material which gives off a gasoline-laden gas, very volatile and highly inflammable." The report says there was oil showing at 1 515 feet and a 6-bbl. showing at 1,862-75 feet, but that drilling was continued to find the third sand supposed to lie at about 2,500 feet. The test is too far removed from the territory of any of our correspondents to check it up. Elko is in Elko County, in northeastern Nevada.

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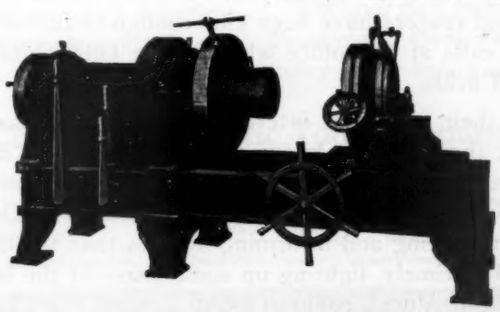

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THE GIRL on the magazine cover is a tribute to the news stands of the country. She is the bid of the publisher for the news stand vote, that great reading public which saunters by and looks them over. She is the unspoken recognition that the test of magazine popularity is news stand sales.

The Oil and Gas Journal is conspicuous on every news stand in every oil field in the country. It needs no adventitious art to attract its readers familiar with its distinctive color and quality. It is significant that, displayed on the stands among all sorts of trade publications, including those purporting to deal with oil, the news stand sales of The Oil and Gas Journal are more than those of all other petroleum publications combined.

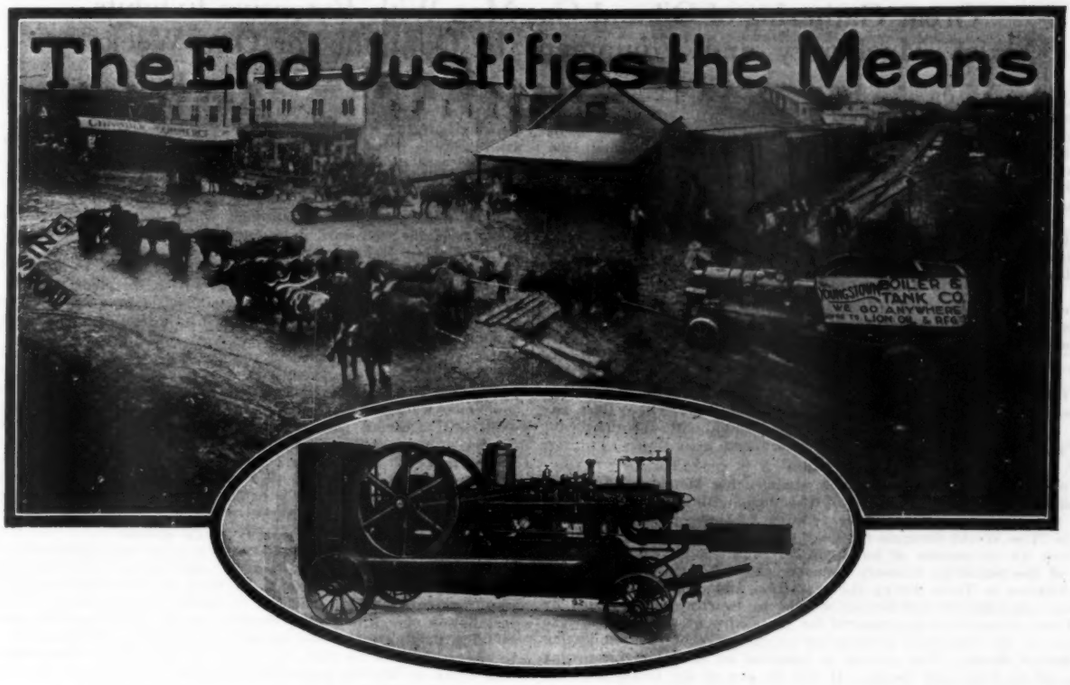
Oil men are traditionally a roving class. Their work makes them so. They are here today and gone tomorrow, as the exigency of their work requires. Those who have assurance of more permanent location, of course, subscribe for The Oil and Gas Journal and have it delivered at their offices or homes. But there is a great mass of oil men who, never knowing where their work may call them, are anxious to get their paper as promptly as possible and prefer to buy The Oil and Gas Journal at the news stand wherever they may happen to be.

The preference of these news stand buyers for The Oil and Gas Journal is really a compliment and a tribute which this publication fully appreciates With the opportunity to "look them over" and pick whatever publication dealing with oil appears on the stand a clear majority of these readers selects The Oil and Gas Journal.

There must be a reason for this overwhelming preference. It is no accidental record: it has run year in and year out and continues unfailingly. Some of these news stand readers have been kind enough to furnish the explanation, either in personal calls at this office when in the Oil Capital, or by friendly letters from far off fields.

They confess their particular interest in The Oil and Gas Journal because it tells them what they want to know, the news of the oil industry in all its phases, the facts and figures, (and they make special mention invariably of their confidence in the accuracy and reliability of The Oil and Gas Journal), the always interesting and informing articles that feature each issue, descriptive, technical or timely, lighting up some phase of the business, or charting the way for the producer, refiner or distributor.

The Oil and Gas Journal welcomes these calls and letters, and particularly during the International Petroleum Exposition and Congress will be glad to see or hear from its friends who will find it here in the heart of the Mid-Continent, the Oil Capital of the United States, the hub of the great petroleum industry which keeps the wheels of the world moving.



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The Compressor with the Simplate Valve

Petroleum Exposition Opens Monday

Great Gathering of Oil and Gas Men With Extensive Exhibits of Machinery and Equipment to Continue for One Week.

The first annual International Petroleum Exposition and Congress—a gathering of men interested in every branch of the oil and gas business with one of the most extensive exhibits of machinery and equipment used in the oil and gas fields—will open in Tulsa next Monday morning at 10 o'clock and continue throughout the week, ending Sunday, October 14. In connection with the exposition and congress, there will be held in Tulsa during the week, meetings and conventions of different organizations and associations connected directly or indirectly with the oil and gas business while the entire week will be somewhat in the nature of an "old home week" when oil and gas men will resume friendships formed in oil fields in various sections of the United States and gather together to swap stories and experiences of the "good old days."

The exposition and congress is expected to bring together one of the largest gatherings of oil and gas men assembled in years. Committees of the International Petroleum Congress and Exposition have endeavored to reserve accommodations for thousands of persons in hotels, rooming houses and private homes in Tulsa. Representatives of various foreign countries interested in the development of the petroleum industry will be among the guests of the exposition and congress during the week and will take part in the program arranged. The United States Government will be represented in displays and in official delegates who will deliver addresses relating to the work of the Government in connection with the petroleum industry and the value of petroleum in different Government activities.

Oil Industry in Picture

At 10 o'clock each morning during the week, commencing Monday and ending Saturday, there will be shown at the Majestic Theater on Main Street between Fourth and Fifth, the greatest motion picture relating to the petroleum industry ever screened. It is "The World Struggle for Oil," a film prepared by the Sinclair Consolidated Oil Corp. at an expense of hundreds of thousands of dollars and depicting the growth of the petroleum industry from the time of Noah. This picture was secured for exhibition in Tulsa during the exposition and congress by The Oil and Gas Journal and admission to the theater will be by courtesy cards issued by this publication. These tickets may be procured for the asking at the booth of The Oil and Gas Journal in the exposition grounds or at the office of the publication at 114-116 West Second Street. The picture is regarded as the most interesting and instructive film of its kind ever shown. It will be one of the features of exposition week.

The exposition and congress will be opened by "King Petroleum" at 10 o'clock Monday morning. His Majesty will arrive in Tulsa on a special train, accompanied by his retinue of court advisers, his entry being heralded by the shrieking of whistles and the clanging of bells.

Greeting the King at the railroad station will be the Tulsa city officials, the officers and directors of the exposition and other notables. The King will be escorted to an elaborately decorated float and, amid a fanfare of trumpets, borne to the exposition grounds, where he will be welcomed by L. B. Jackson, president of the exposition, and handed the keys to the city. Then, for a week, Petroleum will be an absolute monarch.

Important Addresses

Questions of vital interest to the industry will be discussed at the sessions of the Petroleum Congress to be held in Convention Hall on the mornings of October 9 and 10. Distinguished speakers, both from the United States and foreign lands, will talk on such subjects as the problems of the refiner and producer, standardization of oil field equipment, petroleum legislation, the relationship which should exist between employer and employe and petroleum conditions in other lands. The foreign speakers will include representatives from Rumania, Peru, Gautemala and China, while numerous governments also are sending observers. One of the most distinguished of the foreign visitors will be the minister to the United States from Gautemala.

A group of steel buildings has been erected for the housing of the exhibits. Judging by the different features that have been planned, no greater assembling of petroleum information and displays ever before has been attempted. Every phase of the industry will be shown. There will be on the grounds geological displays showing how the scientific preliminaries to oil development are carried out. Three drilling wells will be shown to demonstrate the standard cable tools, rotary and diamond core methods of "making hole." These will not be miniature, but will be exact duplicates of oil field outfits.

Interesting Exhibits

To illustrate the steps through which petroleum passes from the time it is taken from the well until it is put in the consumers' automobile will be an exhibit of the Sinclair Refining Co. This display necessarily is in miniature. It includes tiny oil wells, from which oil is carried by pipe line to a refinery. This plant embraces all the units that are necessary to a complete modern installation. Tank cars show the method of transporting finished products to points of consumption. The final step in distribution is depicted by means of a filling station to which automobiles are driven for gasoline.

A feature of the scientific and technical display, which will occupy an entire building, will be a completely equipped refinery laboratory. This is being installed by two of the largest testing laboratories in the Mid-Continent territory in conjunction with some of the large refining companies. In the laboratory during the week will be chemists and other technical men carrying out tests of petroleum and its derivatives. This display, in conjunction with the miniature refinery, is expected to prove of unusual educational value, exploding a more or less popular fallacy that the refining of oil is a very simple process of boiling oil in a still, when as a matter of fact it is a very complicated and expensive series of processes carried out under scientific supervision.

Many Social Events

Approximately 200 manufacturers of petroleum appliances, refiners, jobbers and others allied with the oil business in some manner will have displays in the industrial section of the exposition. In many of these displays will be units in operation, making a valuable addition to the educational feature of the exposition. One installation of machinery in operation weighs more than 25 tons.

The drilling tools used in modern operations will form an interesting contrast to the tools used by Col. E. L. Drake in drilling along Oil Creek in 1859 the well which marked the beginning of what has grown to be the second largest industry in the United States.

Besides the business sessions and the exposition displays, there will be parades and pageants, receptions and other social events for distinguished foreign visitors and other delegates, two performances daily of the "World's Hippodrome," the first annual session of the Knights of the Derrick, reunions of oil men from various parts of the country—in a word, there will be something happening every minute.

Knights of the Derrick

It is intended next year that the parades and pageants section of the exposition shall be sponsored by the Knights of the Derrick, a non-political, non-sectarian social organization made up of oil men from every branch of the industry. A. V. Bourque, secretary of the Association of Natural Gasoline Manufacturers, with offices in the Mayo Building, Tulsa, has been made chairman of the organization committee. He reports that many applications for membership are being received. The charter membership roll will be closed Saturday, October 6. One of the features that is making the new organization popular is that it is planning to sponsor the oft-proposed movement to establish a home for aged and decrepit oil workers—where the old-timer, poor in the world's goods, but too proud to ask charity, may go to spend his declining years in the happy companionship of men who talk his language and understand his thoughts.

L. B. Jackson, president of the exposition, also is acting as chief executive of the Knights of the Derrick until the first meeting is held during the exposition.

In addition to the sessions of the Petroleum Congress, a large number of conventions will be held in Tulsa the week of the big petroleum gathering. Included

(Continued on Page 184)

Petroleum Exposition and Congress Program for Week

SUNDAY, OCTOBER 7

SPECIAL PRE-EXPOSITION

8:15 p.m. First night performance of World Hippodrome in Convention Hall at Exposition Grounds.

TULSA NIGHT

PROGRAM OF FEATURES

MONDAY, OCTOBER 8

Morning

9:00 OPENING OF EXPOSITION GATES.

9:45 King Petroleum arrives at Frisco Station and is escorted by the president, officers and directors of the exposition to his float, thence over the parade route to the exposition grounds, where he will enter at Brady Street gate, near Main Street. From there he will be escorted on foot to Convention Hall, where he will be met by Mayor Newblock.

10:00 Showing of world's greatest motion picture on the petroleum industry, "The World Struggle for Oil," at Majestic Theater, Main Street between Fourth and Fifth. Complimentary tickets may be procured from The Oil and Gas Journal, or at its booth on the grounds.

CONVENTION HALL PROGRAM

11:00 Invocation.

11:10 Speech of welcome by Mayor Newblock.

11:30 The president of the International Petroleum Exposition and Congress presents the scepter to King Petroleum.

11:45 Royal address by King Petroleum.

11:50 Appointment of Committee on Permanent Organization.

12:00 Music by Exposition Band.

Afternoon

12:10 Report of Committee on Permanent Organization.

12:20 Adjournment.

Evening

7:00 Unveiling of window displays up town.

8:00 Public parade from up town to exposition grounds.

10:30 Street dance on Sixth from Main to Boulder, and on Boulder from Sixth to Fifth.

TUESDAY, OCTOBER 9

Morning

8:45 Opening of Exposition Gates.

10:00 Showing of world's greatest motion picture on the petroleum industry, "The World Struggle for Oil," at Majestic Theater, Main Street between Fourth and Fifth. Complimentary tickets may be procured from The Oil and Gas Journal, or at its booth on the grounds.

9:00 Opening of International Petroleum Congress at Convention Hall. Address by President L. B. Jackson.

9:30 Address by Elwood Sampson, secretary, Detroit Association of Purchasing Agents, "Profits From Purchasing."

10:00 Address by W. A. Durgin, United States Department of Commerce, "Standardization."

10:30 Address by Senor Don Francisco Latour, Minister from Gautemala, "Prospects of Oil in Gautemala."

11:00 Address by Dr. Santiago F. Bedoya, Secretary of the Peruvian Embassy, "Petroleum in Peru."

11:30 Address by K. C. Heald of National Research Council.

12:00 C. Clark Reed, "Relationship of Supply Companies to the Oil Producers."

Afternoon

12:15 Adjournment.
12:30 Group Luncheon Meetings.

CONVENTIONS

1:00 W. L. Chandler, "The District Conference."
2:00 Dr. A. P. Bjerregaard, "Fuel Talk," with hour's discussion following.
4:00 President Steele, "The National and the District."
6:00 Tea Room Tulsa Hotel, Tulsa Past President Dinner to Visiting National Officials. Attendance limited. Discussions following.
Oklahoma Jobbers' Association at Chamber of Commerce Auditorium in Municipal Building, Fourth and Cincinnati.
Western Petroleum Refiners' Association at Mid-Continent Oil & Gas Association offices, Cosden Building, Fourth and Boston.

PROGRAM

Afternoon

1:00 "Are Present Prices, Based on Gravity, Equitable When Compared With Yields?", R. R. Irwin.
"Refinery Processes and Yields From Various Grades of Crude," Fred Koontz.
"Outlook," F. A. Pielsticker.
Meeting of Board of Directors.

OTHER EVENTS SCHEDULED

Evening

9:00 Formal reception for foreign and American delegates to the International Petroleum Congress, Tulsa Country Club. (By invitation only.)

WEDNESDAY, OCTOBER 10

Morning

8:45 Opening of Exposition Gates.
10:00 Showing of world's greatest motion picture on the petroleum industry, "The World Struggle for Oil," at Majestic Theater, Main Street between Fourth and Fifth. Complimentary tickets may be procured from The Oil and Gas Journal, or at its booth on the grounds.
9:00 International Petroleum Congress at Convention Hall, Exposition Grounds. Program of International Petroleum Congress.
9:00 Address by Judge Julius A. Germany "The Independent Refiner."
9:30 Address by Dr. Bennett Chappel of the American Rolling Mill Company "Human Contact and Fellowship in Business."
10:00 Address by Rear-Admiral J. K. Robison, Chief of Bureau of Engineering, U. S. Navy, "Petroleum in the Navy."
10:30 Address by J. Cueva Garcia, Delegate from Ecuador, "Oil in Ecuador."
11:00 Address by Mr. George Anagnostache, Delegate from Rumania, "Nationalization of Petroleum in Rumania."
11:30 Mr. T. O. Chu, Delegate from China, "Oil Fields of China."
12:00 Congressman E. B. Howard, "Legislation and the Oil Industry."
12:30 Adjournment for Group Luncheons.

Afternoon

1:00 KING PETROLEUM'S PARADE (See Parade Route elsewhere).

CONVENTIONS

Second day meeting of Western Petroleum Refiners' Association, at Federal Court Room, Post Office Building, Third and Boulder.

PROGRAM

"Sales," Myers Gross.
"Traffic," P. M. Miskell.
"Production Costs and Relation of Producer to Refiner," W. B. Hamilton.
Meeting of Executive Committee.
Annual Mid-West District Conference of the Retail Credit Men's Association at Episcopal Church, Fifth and Cincinnati.
General Standardization Committee on Rig Irons at Carnegie Library, Third and Cheyenne.

Evening

8:00 Mid-Continent Oil and Gas Association Banquet at Hotel Tulsa.

PROGRAM.

"Government and the Oil Industry," Judge C. B. Ames.
"Economics and Legislation," Thos. P. Gore.
Roll call of the Oil States of the Mid-Continent Field.
Oklahoma, Judge John J. Shea; Texas, J. D. Collett; Louisiana, F. M. Witherspoon; Arkansas, W. H. Rector.
Technical Club of Oklahoma.

PROGRAM.

Headquarters in Scientific and Technical Division at Exposition Grounds all week.
Formal Opening of the Technical Department of the Tulsa Public Library on second floor of Library Building, Third and Cheyenne, from 4 p. m. to 6 p. m. Refreshments will be served during this period. Everyone invited.
Association of Natural Gasoline Manufacturers at Chamber of Commerce, Municipal Building, Fourth and Cincinnati.

THURSDAY, OCTOBER 11.

Morning

8:45 Opening of Exposition Gates.
9:30 Southwestern Business Congress in Convention Hall at Exposition Grounds.
10:00 Showing of world's greatest motion picture on the petroleum industry, "The World Struggle for Oil," at Majestic Theatre, Main Street between Fourth and Fifth. Complimentary tickets may be procured from The Oil and Gas Journal, or at its booth on the grounds.

PROGRAM.

9:15 Opening of Session.
9:30 Invocation by Reverend Rolfe P. Crum.
9:50 Address by Dr. Bradford Knapp, "The Place of Agriculture."
10:15 Address by Col. Clarence Owsley, "Financing Agricultural Products."
10:45 Address by James R. Howard, "The New Epoch and American Agriculture."
11:15 Address by W. B. Storey, "Transportation With Relation to the Development of the Southwest."
11:45 Appointment of Committees.
12:00 Adjourn to Group Meetings.

Afternoon

12:15 Group Luncheon Meetings.

CONVENTIONS

Meeting of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers.

OCTOBER 11 AND 12.

"Separation and Purification of Liquids by Centrifugation, with Special Reference to Petroleum," A. F. Meston.
"Centrifugal Removal of Wax from Petroleum Lubricating Oils," Leo D. Jones.
"Centrifuging Petroleum Refinery Emulsions," Eugene E. Ayers.
"Principles of Chemical Treatment of Cut Oil," E. O. Sanguinet, Chief Engineer, the Tret-O-Lite Co.
"Principles of the Electrical Treatment of Cut Oil," F. D. Mahone of the Petroleum Rectifying Co. of California.
"Evaporation Losses," J. H. Wiggins, formerly of Bureau of Mines.
"Evaluation of Casinghead Gas," O. U. Bradley, Engineer for the Indian Agency at Muskogee.
"Explorations for Petroleum in the United Kingdom," E. L. Ickes.

The general theme of the program is the handling of oil on the leases. Several other papers, the titles of which have not been announced, are expected to be presented. The meetings are open to the public, and special invitation is extended to all production men. It is hoped that in the discussions of the various papers many valuable points will be brought out.

Meetings are held morning and afternoon in the High School Auditorium, Sixth and Cincinnati streets.

Business Meeting of Mid-Continent Oil and Gas Association at own offices on the fifth floor of Cosden Building, Fourth and Boston.
Mid-Continent Section of American Society of Mechanical Engineers.
2:00 Business Session, Auditorium Municipal Building, Fourth and Cincinnati.
3:00 Open Technical Session, Auditorium Municipal Building.

PROGRAM

"Gas Measurement," H. R. Pierce.
"The Evaporation of Crude Oil," Charles P. Buck.
"Manufacture of Gasoline by Cracking Heavier Oils," C. M. Johnson.
During the entire Exposition the Mid-Continent Section of the A. S. M. E. will maintain headquarters at Booth 3 in the section assigned to Technical and Scientific Societies.
Southwestern Retail Credit Men's Association at Episcopal Church, Fifth and Cincinnati.
State Junior Chamber of Commerce at Municipal Building, Fourth and Cincinnati.

FRIDAY, OCTOBER 12

Morning

9:00 Opening of Exposition Gates.
10:00 Showing of world's greatest motion picture on the petroleum industry, "The World Struggle for Oil," at Majestic Theatre, Main Street between Fourth and Fifth. Complimentary tickets may be procured from The Oil and Gas Journal, or at its booth on the grounds.
9:00 Southwestern Business Congress in Convention Hall at Exposition Grounds.

PROGRAM

9:30 Address by J. F. Owens, "Public Utilities and the Development of the Southwest."
10:00 Address by Carl F. G. Meyer, "Merchandising and Distribution in the Southwest."
10:50 Address by Chancellor E. H. Lindley, "National Affairs and the Southwest."
11:30 Reports of Committees, and election of officers.
12:00 Adjournment.

Afternoon

12:15 Group Luncheon Meetings.

CONVENTIONS

Institute of Petroleum Technologists at High School Auditorium, Sixth and Cincinnati.
Southwest Retail Secretaries' Association at Episcopal Church, Fifth and Cincinnati.
Program of Addresses from 9:30 a. m. to 5 p. m.

OTHER EVENTS SCHEDULED

Afternoon

3:00 Football game at McNulty Park, Tenth and Elgin. University of Tulsa vs. Arkansas Agricultural College.

SATURDAY, OCTOBER 13

Morning

9:00 Opening of Exposition Gates.
10:00 Showing of world's greatest motion picture on the petroleum industry, "The World Struggle for Oil," at Majestic Theatre, Main Street between Fourth and Fifth. Complimentary tickets may be procured from The Oil and Gas Journal, or at its booth on the grounds.

Afternoon

1:00 Merchant's Parade.

OTHER SCHEDULED EVENTS

Evening

9:00 Queen's Coronation and Ball at Tulsa Country Club. (Invitations only.)
Smoker and reception to visiting Knights, Knights of Columbus, Club House, 604 South Frisco Avenue, Thursday, October 11.
Each day of exposition registration of delegates at 212 South Boston Avenue. Validation of railway certificates to insure half-rate return fares.

SUNDAY, OCTOBER 14

Morning

10:00 Opening of Exposition Gates.

EACH DAY

2:15 and 8:15 p. m. World's Hippodrome in Convention Hall, Exposition Grounds.
Parade Routes: Monday, 10:00 a. m.; Wednesday, 1:00 p. m.; Saturday 1:00 p. m.
Parades form on Detroit, right resting on Second.
Wednesday's and Saturday's parades move promptly at 1:00 o'clock, west on Second to Boston; south on Boston to Eighth; west on Eighth to Main; north on Main to First; west on First to Boulder; south on Boulder to Fifth; west on Fifth to Cheyenne; north on Cheyenne to Archer. Disband.

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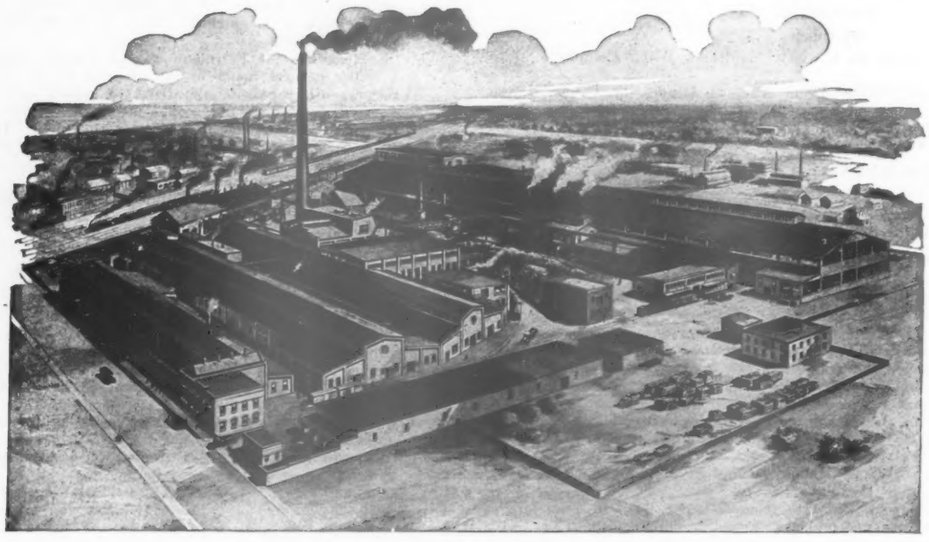

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INTERNATIONAL PETROLEUM EXPOSITION AND CONGRESS TULSA, OKLA. OCT. 8-14

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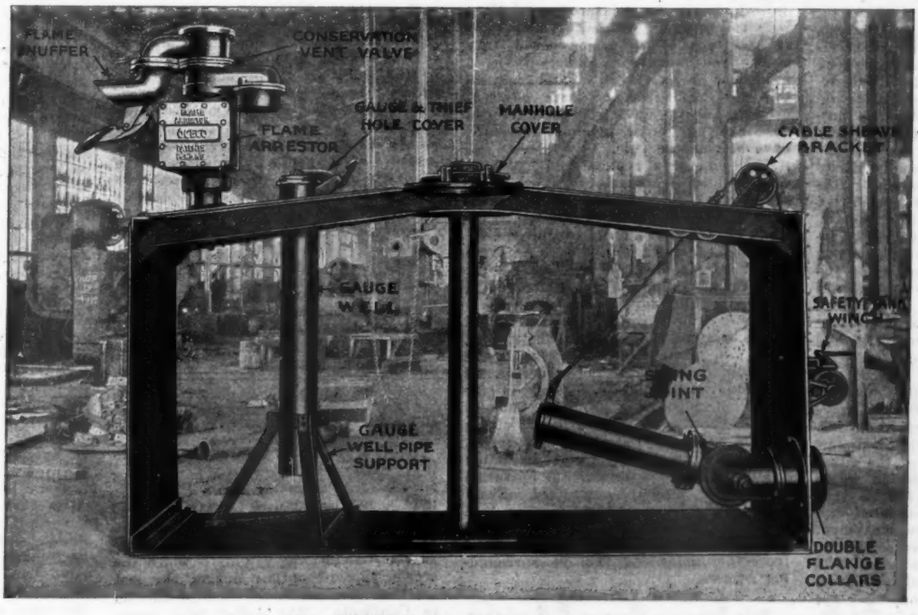

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OCECO

Petroleum Situation as Seen by Bankers

Oil a "Wasting Asset" Which Must be Protected Against Heedless Premature Exhaustion by More Economical Processes.

The recent drastic reductions in the prices of gasoline are the natural consequence and expression of a situation which has been in process of development for at least two years, says the Guaranty Survey, of the Guaranty Trust Co. of New York. The over-production of oil during this period, and the resulting accumulation of stocks of crude petroleum and its products, have been regarded with growing concern. Although the present "price war" began with the retailing of gasoline by an official of a western State, there has been ample evidence that a general fall in oil prices was imminent.

Clearly, relief must be sought either in reduced production of crude oil or in increased consumption of oil products. For many reasons the most desirable means of accomplishing a curtailment of output would be voluntary, concerted action on the part of the producers themselves. But the type of organization which prevails in this branch of the industry makes such a solution virtually impossible, and the necessary reduction of output will probably come as a result of extremely low prices, making the operation of many wells unprofitable. Restriction of purchases by the refineries may offer the most immediate and effective means of curtailing crude oil production, with a minimum of embarrassment of all concerned.

Public Interests Involved

From the standpoint of the public, restricted purchasing by the refineries would appear to be preferable in the long run to the price-cutting which has actually taken place. Any excessive reduction in the prices of petroleum products is unfortunate in that it unduly stimulates consumption and hastens the depletion of the already rapidly disappearing resources of the country. This point has a more important application at present than may at first appear, since a lowering of prices promptly induces changes in habits of consumption and the adoption of equipment for the use of oil products which permanently affect the demand.

The prodigality with which this country's oil resources have been exploited has not been sufficiently recognized. Out of an original estimated reserve of something like 15,000,000,000 bbls., already at least 6,400,000,000 bbls. have been extracted. And the rapid growth of the industry during the last few years increases the gravity of the situation. If the rate of production which prevailed for the first half of this year should be maintained, the estimated supply would be exhausted in twelve years; while if output should increase at the average rate of the last three years, 1931 would see the end of our oil resources.

Fortunately, this situation is not likely to arise, for the physical conditions under which production is carried on are such that the maximum rate cannot be maintained. The peak of the production of each well is reached very early in its life, and the flow of oil gradually diminishes until its exhaustion. Even with the discovery of new and rich deposits in California, the acceleration of output has been accomplished only by the sinking of an enormous number of new wells. On December 31, 1922, there were approximately 284,880 producing oil wells in the United States, operated by about 5,000 individual owners. This compares with 258,600 wells in 1920, 203,000 in 1918 and 169,000 in 1913. Outside of California the average rate of production per well declined from 1920 to 1922 in every field except one, the Lima-Indiana, where it remained stationary.

FINANCIAL VIEW OF THE OIL INDUSTRY

Any excessive reduction in the prices of petroleum products is unfortunate in that it unduly stimulates consumption and hastens the depletion of the already rapidly disappearing resources of the country.

The competitive factor in oil production destroys the delicate adjustment of supply to demand which is a feature of most industries. A second effect is waste.

Gasoline, formerly a by-product, has now become the leading product, while kerosene, once the main support of the industry, has been relegated to a minor position.

Fuel oil, though always by far the greatest in actual volume, has been in an economic sense a by-product. In recent years its advantages over coal have been more generally recognized and its popularity has increased to such a point that a reversal of its economic position in the near future seems probable.

The ratio of demand in this country to domestic supply has been steadily rising, and since 1919 we have consumed in the aggregate a greater volume of refinery products than was manufacturer from the output of domestic wells.

Within a few years either our consumption of oil products must be greatly curtailed, or we must become dependent upon other countries for the greater part of our requirements—not because of the immediate exhaustion of our oil resources, but because of the impossibility of maintaining our present rate of output without an investment in new wells and equipment which is out of the question so long as oil prices remain near their present levels.

Competitive Factor in Production

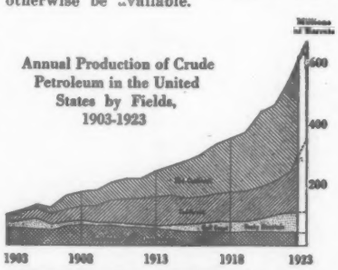
The extraordinary accumulation of crude oil and refined products is related to the peculiar competitive conditions under which petroleum is produced. Even with the progress which has been made in the study of the geology of oil, the extent and potential productivity of a new field are so largely problematical that the acquisition of large adjacent areas is discouraged by the degree of risk involved. Small holdings, therefore, have become the rule.

The plan of a typical field has been compared to a checkerboard, each square representing an individual claim. These holdings, which are not infrequently as small as ten acres each, overlie a common pool, or reservoir, of oil. As every gallon extracted by one well reduces the potential production of those surrounding it, the drilling develops into a race in which each producer tries to get the oil before someone else gets it. The sinking of a well on the edge of a claim must be offset by one across the border on the adjoining claim; while a well in the corner of a claim is promptly followed by three "offset" wells in the adjoining corners of the three contiguous tracts. And this stimulus to rapid extraction applies with equal force to the operation of the wells already constructed. Every idle day or hour in the life of a well represents a permanent loss of output, for meanwhile the oil is being drained from the underlying pool by surrounding owners.

Speeds Extraction

This situation has two important effects. The first is a strong inducement to the competing producers to extract the oil with the greatest possible speed —an inducement which only a ruinously low price of crude petroleum could remove. Even when low prices place their operations on a losing basis, many producers maintain their activity at an undiminished rate rather than stand by at the risk of seeing the field gradually drained by their competitors. Thus the delicate adjustment of supply to demand which is a feature of most competitive industries is destroyed, and the production of crude petroleum continues unchecked in spite of the immense stocks accumulating in the tanks of pipe line and refining companies and the heavy reductions in prices of crude and of refined products.

The second effect of this competition in oil production is the waste occasioned by the loss of pressure. Oil generally occurs in close association with gas under high pressure, which materially lessens the difficulties and expense of extracting it. This pressure, of course, is never of sufficient duration to force all the oil to the surface; but, under the most favorable conditions, it frequently continues for long periods. Obviously, the "punching" of the pool at thousands of points results in a very great waste of pressure, and not only advances the stage in which the product must be pumped to the surface at a considerably increased cost, but makes impossible the recovery of some of the oil which might otherwise be available.



Annual Production of Crude Petroleum in the United States by Fields, 1903-1923

The chart above illustrates one of the outstanding features of the current situation—namely, the extent to which the acceleration of output during the last year has been due to the flush production in California. The dotted lines represent a projection of production through 1923 on the basis of the quantities produced in the first half of the year. The fact that the present level of output is so largely a result of the bringing in of these new flush wells makes it especially unresponsive to changes in price; first, because under such conditions the inducements mentioned above to maintain production at the maximum rate are particularly strong; and second, because price fluctuations react first on marginal producers—that is, producers who operate at the highest costs—and the owners of the flush wells of California, instead of operating at the margin, are at the other end of the scale.

Transportation and Manufacturing

The bulk of the petroleum produced in this country is carried by pipe-lines, which constitute by far the cheapest and most efficient method yet devised for its transportation.

Although pipe-lines have been held to be common carriers under the jurisdiction of the Interstate Commerce Commission, and as such are under obligation to accept and transport oil belonging to others, as a matter of fact the pipeline companies buy most of the oil outright at the fields. Pipe-line carrying rates and prices paid for petroleum at the wells have usually been such as to make it more profitable for producers to sell their oil than to transport it.

The degree of integration in the transportation and manufacturing phases of the industry and the intensity of competition in crude oil production combine to produce a peculiar situation. The decline in prices of petroleum products which would ordinarily follow any considerable and sustained over-production can be greatly retarded; and, due to the decrease of supply which might be expected to result from a reduction in prices, so far as is indicated up to the present time, does not take place.

In considering the general results, however, the benefits of economies in large scale integrated processes, of whatever degree of price stabilization may obtain, and of continuity of operations in the face of unfavorable market conditions, must be offset against the cost of providing extraordinary storage facilities and a rapid depletion of the country's petroleum reserves.

It has been said on high authority that recent reductions in gasoline prices carry them far below the cost of production, transportation and manufacture. How generally applicable this statement may be is not clear, inasmuch as the divergence which exists in cost of production as between different concerns is especially marked in the petroleum industry. Moreover, the enormous California output, which is the dominant factor in the present situation, is produced under conditions such that margins between cost and selling price scarcely enter into the reckoning.

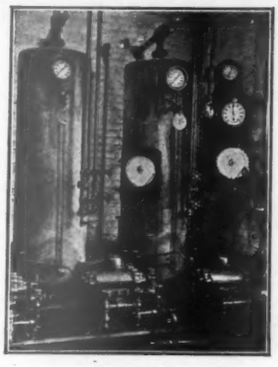
Growth of Demand

Rapid as has been the progress in the exploitation of the oil resources of the United States, until recently it has been insufficient to keep pace with the mounting demand for petroleum products. The chief factor in this expansion of demand, of course, has been the amazing growth of automotive transportation. The efforts of the oil industry to supply gasoline and lubricants in the required quantities have brought about a number of important changes within the industry itself. Gasoline, which was formerly a by-product in the manufacture of kerosene, has now become the leading petroleum product, while kerosene, once the main support of the industry, has been relegated to a minor position. Modifications in refining processes have been introduced with a view to extracting the maximum percentage of gasoline from the crude oil, and the production of so-called "casing-head" gasoline from natural gas has been resorted to on a large scale.

A rapid expansion has taken place likewise in the consumption of fuel oil, although this is in large measure a result rather than a cause of the increased output of crude petroleum. The four principal mineral-oil products—gasoline, kerosene, gas and fuel oils and lubricating oils—are joint products. The manufacture of each necessarily involves the production of the others at the same time. And only to a limited extent can their relative quantities be modified by the adaptation or refining processes.

(Continued on Page 182)

Measuring Pressures and Temperatures In the Refinery



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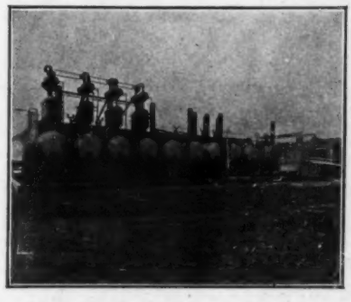

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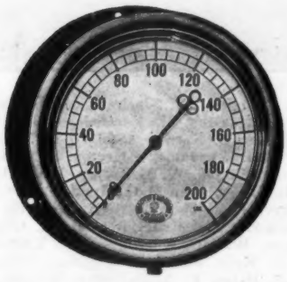

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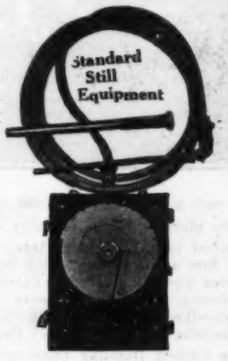
Columbia Refinery Recording Gauge



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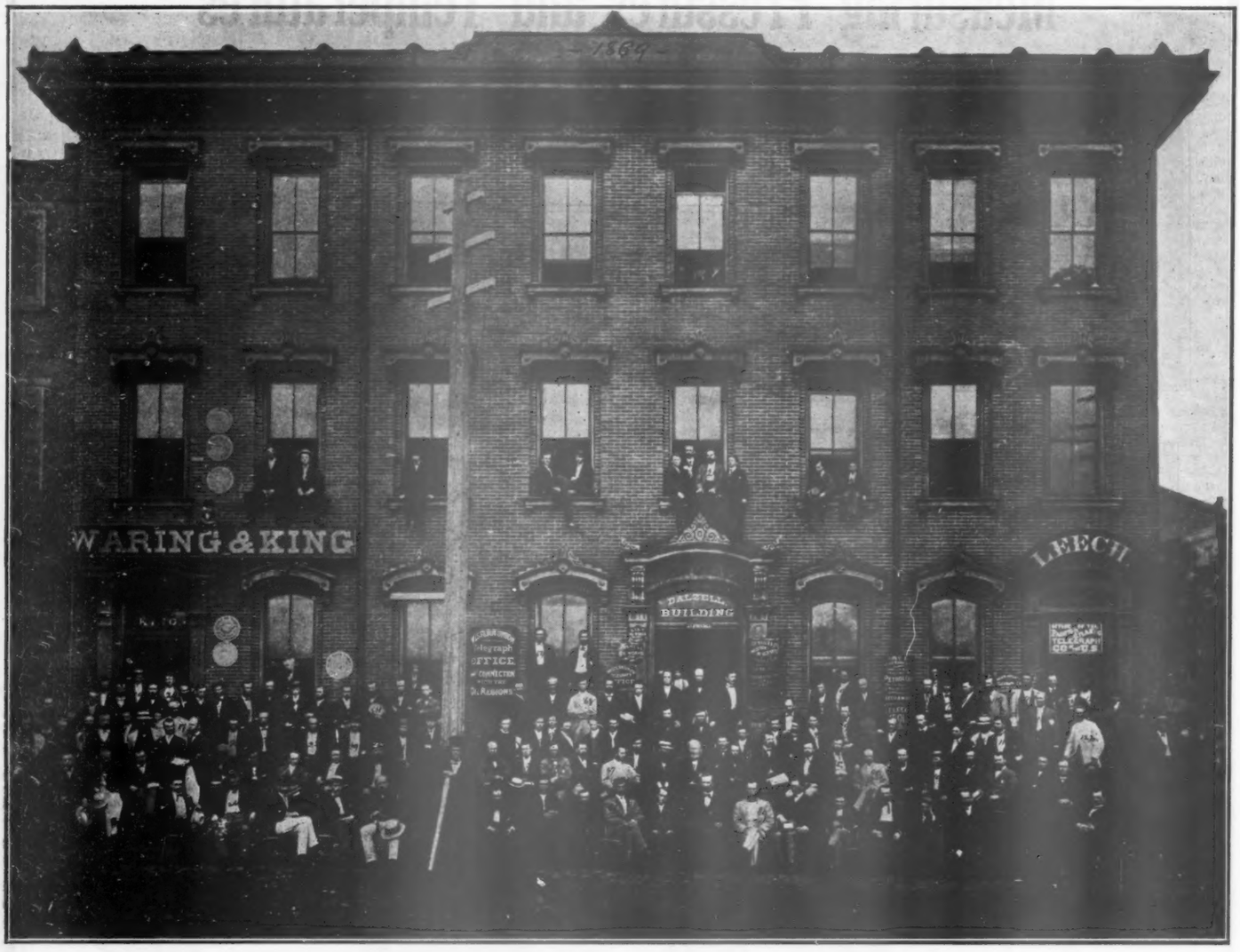
Pioneers of the Oil Industry Gathered in Pittsburgh in 1869



It was a great day for the oil fraternity of the Pittsburgh district in 1869 when the pioneers of the industry which has grown by leaps and bounds to one of the greatest in the world gathered in front of the old Dalzell Building on Fourth Avenue just above Cherry Alley to have their pictures taken. The oil trade probably never was or has been so extensively represented as in the picture shown above. The industry, then only 10 years old, was confined to the section around Oil City and Titusville, and the men shown in the picture are those largely responsible for the petroleum activities at that time.

The Dalzell Building (now torn down) was at that time the center of petroleum activities in Pittsburgh. The signs at the sides of the entrance show that the building was populated largely by "commission merchants in petroleum," "commission merchants, factors in petroleum" and others interested in the development of the oil region.

Among the oil men shown in the picture are: S. F. Duncan, D. B. Agnew, Joseph Myers, I. Montzheimer, B. D. Moore, Brown of the B. W., W. W. Fullwood (Gauger), William Hastings. —— Pohl, Keohler, of M. K. & Co.; Arnold Hurtz, Julias Livingston, R. S. Waring, Heary Holdship, S. Robertson (Bbls.), Wagner, of B. & W.; George Smiley, Thomas Adams (Bbls.), John McKee, F. Fisher, I. Wagoner, R. Thornburg (Reporter), J. B. Barbour, Sr., W. P. Richardson, A. Lyons, F. Stoeltzing, Mills, Jr., A. B. Mills, E. Wromser, George Kehew, Max Livingston, M. Edwards, Hill, (Warf Master), J. G. Findley, R. McChesney, S. Lewis, H. Koehler (Stella), D. Martin (Asst. Gauger), R. D. Clarke, S. L. Gillson (Tel. C.), James Edgerton, J. N. Nobbs (Gauger), William Wheeler (Reporter), James Wilkins, W. McKelvey, W. Cuthburt, John Benn, B. S. Duncan, Lem Young, J. H. Miller, John McCurdy, J. C. Fisher, Charles Wormcastle, T. Hackett, William Murry, F. Nobbs, D. Kirk, Bondkins (Cooper), D. Bly, Bly, B. W. Morgan, J. Honiger, Charles McCutcheon, M. Gormley, B. W. Flack, James O'Hara, W. P. Logan, W. McCutcheon, Sr., J. T. Stockdale, Charles Lockhart, F. Forsythe, Sr., E. C. Keys, James Mawhinney, Charles Kehew, D. M. Edgerton, John Warden, F. A. Bates, F. A. Dillinger, William Frew, Thomas Davis, S. Richardson, C. C. Burke, Jack Reynolds, James Lyon, R. T. Leach, O. Jones, O. S. McLlwaine, W. Dillworth, J. Metzger, H. M. Long, President J. W. Balentine, W. S. Batcheller, A. F. Brooks, Secretary, S. Loomis, M. O'Brien (Inspector), J. Barbour, S. S. Pinkerton, William Woods, J. F. Woods, John Wrentz, J. C. Peabody, John Carrothers, John Gracy, T. Tack, F. Tack, J. Hill, W. H. Egderton, D. W. Cochran, George Long, John Black, T. Petty, William Forsythe, J. A. Hutchinson, W. Leckey, J. K. Barbour, O. Phillips, L. Erwin, J. S. Hunter, Edward Waring, G. Nicholas, William Marshall (Telephone Operator), G. Jerry Gumbert, Thomas Smith, George Knox, Mills Ford.

Not to Cut Gasoline, Says Vice President Of Indiana Standard

ST. PAUL, Minn., Sept. 29.—Increase in the price of gasoline to Northwest consumers is extremely unlikely for some time, but further decrease will not be made because selling price already is below cost of production, John D. Clark, vice president of the Standard Oil Co. of Indiana, testified at the inquiry just completed by the Minnesota Department of Agriculture. The statement was in comment on the reduction in the crude oil price. Refiners now producing gasoline below the selling price will absorb the crude price reduction, he said.

No change in kerosene prices is likely, Mr. Clark said, as there is no overproduction. He denied his company first cut prices, declaring the general drop was the result of the sudden overproduction of crude oil, particularly in California. He said his company is spending $10,000,000 this year on new filling stations to keep pace with increasing consumption.

The findings of the Agricultural Department will be that the Standard Oil Co. controls the price, according to a report from authoritative sources. The report of the inquiry will be submitted at the conference of attorneys general of the Middle West States at Chicago October 15. Independent dealers testified they fixed prices to conform to the scale fixed by the Standard. Mr. Clark said competitive companies are operating more stations than Standard Oil of Indiana in its territory. Against 100 filling stations operated by the Standard in Indianapolis and 159 by other companies in September, 1922, there are now 109 Standard stations and 16 under construction and 223 operated or under construction by other companies.

Mr. Clark said that although the price of gasoline, 16.9 cents, is below the cost of refining, the company is not losing money on its current sales due to profits derived from by-products.

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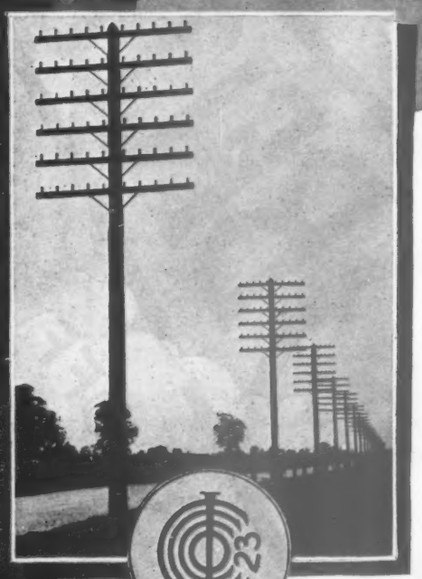

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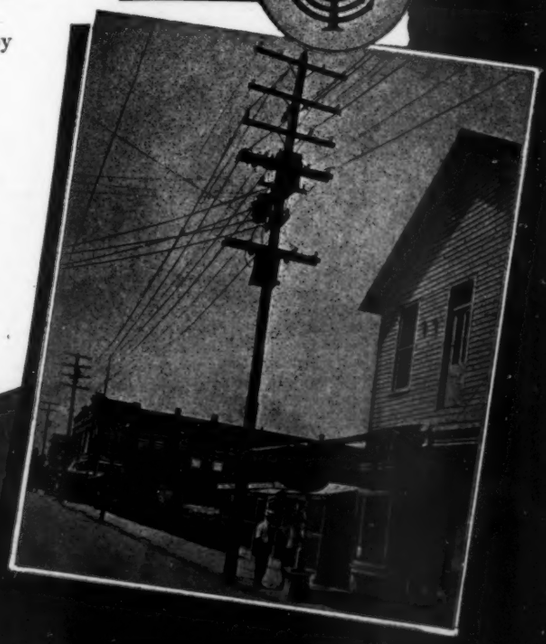

Foreign Competition Big Market Factor

Activities of Dutch-Shell Declared Real Reason For Flood of California Oil to East. Politicians Have Been Asleep.

By N. O. Fanning

NEW YORK, Oct. 1.—While the attention of the oil industry, the public and the politicians has been focussed largely on problems growing out of the overproduction of crude oil in the United States, a drama has been enacted in the world of international politics which has escaped the observation of all but a few outside of those immediately concerned. While this drama may seem to belong more to the realm of oil, it is only a step in the evolution of the international fight for oil supremacy.

In this latest step, American oil interests have undoubtedly been worsted. However, they have only themselves to blame, inasmuch as no attempt has been made to stop the forward progress of the great internaional organization concerned. Nor has it seemed advisable, or in line with American traditions, to stand in the way of the Dutch-Shell organization in its activities in this country. We have steadfastly mantained the policy of the open door, although other nations have not reciprocated.

Dutch-Shell Extends Interests

Under cover of a flood of oil the Dutch-Shell combine has extended its interests in the United States until it is one of the largest producers of crude oil and is strongly represented in the production, transportation and refining of oil in every big field in the country. It has become one of the principal competitors of the Standard Oil companies and big American independents in supplying American oil in foreign countries.

The story of its meteoric rise in American oil history will be looked back upon as one of the most important events in international oil history and international politics. The Shell Union Oil Corp. marked the completion of the first step in the mobilization of the Dutch-Shell combine's properties in the United States, when large properties in the Mid-Continent Field and California were brought under single management and operation. The formation of this corporation was accomplished through the aid of New York banking interests, representing the Dutch-Shell organization, and considerable stock was sold to the American public for the purpose of raising money to carry on its large program of expansion.

Thwarted in West

The acquisition by the Dutch-Shell combine of the Union Oil Co. of Delaware was the first step in the aggressive campaign carried on to build up a really big organization in this country. The consensus is that the real purpose of this purchase was to procure an interest of 26 per cent held by Union of Delaware in the Union Oil Co. of California. In fact the Dutch-Shell combine, working through Union Oil of Delaware representatives, attempted to procure a larger interest in the California company than 26 per cent. The combine was undoubtedly working to get control of the Union Oil Co. of California. This move was forestalled by the patriotic and farsighted action of the leaders of the latter concern in forming a pool of the majority of the company's stock, and incorporating it under the name of the Union Oil Associates.

Thwarted in this direction, the Dutch-Shell combine angled for an interest in the Pacific Oil Co. The Standard Oil Co. of California, which, by the way, is now one of the leaders of the Standard Oil group in the carrying out of the policies of Standard Oil and is a big factor in the internaional oil situation, here promptly stepped in and acquired a large interest in the Pacific Oil Co. on its own account to keep control of this big American organization out of the hands of foreigners.

This action brought the aggressiveness of the Dutch-Shell combine into the limelight so that the latter was content for the time being with developing its holdings and announced that it did not contemplate acquisition of any more American properties.

Dutch-Shell in California

It seems in retrospect that the big California organizations foresaw the big flood of oil which was to come from the three big fields of Long Beach, Huntington Beach and Santa Fe Springs. Of course it seems improbable that they could have anticipated as large a flood as was actually poured forth, but their actions in struggling to acquire large oil properties indicated that they expected California to occupy a big place in the world oil situation within a short time. Even if they did not actually know what was coming, their actions seemed to have been very well timed. If the Dutch-Shell combine had succeeded in gaining control of both the Union Oil Co. of California and Pacific Oil (which controls Associated Oil) its complete California organization, which would have also included the properties of the Shell Co. of California, would have surpassed Standard Oil, and the Dutch-Shell would have dominated the California oil situation.

As it turned out, the Shell Union Oil Corp.'s organization has proved to be very big factor in American oil situation, even so far as having an effect on oil prices.

Reason for Big Contracts.

It was doubtless the Shell Union Oil Corp.'s control of large California production and its readiness and financial ability to buy additional crude for export, that forced the Eastern refiners to make large contracts for the purchase of California crude and refined oil early this year. If they had been able to buy Mid-Continent crude oil at a price which would have enabled them to compete with the Dutch-Shell organization in Europe and the Far East they would not have had to go to California, but here is where the Mid-Continent purchasing agencies unintentionally played into the hands of the Dutch-Shell combine, although they acted with the honest intention of aiding the small oil producer in the Mid-Continent Field.

Standard Oil, in proving its readiness and ability to take care of 150,000 bbls. of California production daily in eastern plants alone, without counting the amount of California oil used in the California refineries of Standard of California and Associated Oil, and with the help of American independents, forestalled efforts of the Dutch-Shell, by flooding the foreign markets with cheap California oil, to thereby undersell the American companies. If American companies had not acted quickly, they would have suffered tremendous losses of business in Europe, the Far East and elsewhere.

This is the real meaning of the steady stream of oil tankers plying through the Panama Canal daily with California oil destined for Gulf and Eastern refineries of the United States, for Mexico, for Europe and all other parts of the earth.

Effect on American Consumer

Doubtless the American oil markets could be better stabilized if American companies had no competition from abroad. However, this foreign competition exists, and will always exist. At the present time, however, there would have been little such competition had the Dutch-Shell organization kept outside the United States, for it would have had great difficulty in getting large production at small cost elsewhere to compete with American oil, especially since the decline of oil production in Mexico. The California situation, therefore, proved a bonanza to the Dutch-Shell combine, just as Mexico had before, and inasmuch as the combine is now well intrenched in the California, Rocky Mountain and Mid-Continent Fields, it has little to worry about as far as the development of its holdings in other countries is concerned.

It is impossible to hold American oil prices up artificially as long as there is foreign competition. During the recent depression, the competition came from an American field, but the presence of a foreign organization in that field was the deciding factor in fixing of prices.

Foreign Markets Flooded

One question which now arises is that of how much more oil has been shipped abroad as a result of the competition between the Dutch-Shell, Standard and American independents, than foreign countries have actually needed? Allowing for a normal increase in consumption abroad, the large quantities of oil shipped abroad this year seem to represent a rather unhealthy condition. A study of the export figures shows that practically all the surplus shipments over last year's represent oil exported from California. Much of this, by the way, is crude oil shipped from California to Mexico by the Dutch-Shell organization.

The conclusion is that much of the surplus oil shipped from California this year represents oil shipped from California in competition with the oil supplied by the old exporters from Eastern refineries. It is more than likely that stocks of oil in foreign countries are now unusually large, and that some of this oil will back up on the American markets, or, otherwise, stand in foreign tanks for many months. A sudden decline in oil production in the United States, of extensive proportions, would correct this, however.

European nations have had to "skimp" on natural resources for many hundreds of years, not being so bountifully supplied in proportion to population as the United States, which is in a much earlier stage of development. It is therefore natural for such nations to want to conserve their oil resources so long as they can get oil from the United States in unlimited quantities. The Dutch-Shell's coup in securing a firm foothold in the United States, therefore, can be considered a master stroke, for as long as oil can be secured here there is no need to develop the oil resources which are stored underground at practically no expense.

The situation is, then, that while the American Fields are being drained as fast as it is humanly possible to drain them, and what oil that cannot be sold is stored above ground, the oil resources of foreign countries are being stored underground, at zero cost and with no losses. It seems certain that a time will come when the United States will be drained dry, and American refiners will have to depend on foreign oil fields. The latter are preparing for this by acquiring prospective oil properties abroad, especially in South America. They have already begun to develop some of them.

Politicians Asleep

While a certain class of politicians is engaged in attacking the American oil industry on petty counts, it is entirely oblivious to the big things that are happening in the oil industry. For this reason they are not only a hindrance to the industry, but they are doing nothing to protect the interests of future generations of Americans.

The question will be asked as to what they could do if they wanted to do anything.

The answer is that they could put certain restrictions on the activities of foreign oil companies operating in the United States. The only restriction which would be needed, it seems, would be to prevent them from exporting oil from their properties in the United States. This seems perfectly just, in view of the fact that oil development in British and Dutch territory, for instance, is very strongly restricted. These nations even go so far as to hamper their own nationals in developing oil resources in their own territory, evidently for the purpose of conserving their resources as long as possible.

It certainly seems fair that foreign countries should not be allowed to enter the United States, help themselves to whatever oil they want and take it back to their own countries for use when they have undeveloped rescources of their own.

The situation is well worth serious consideration on the part of Congress and the American people.

Illustrates Real Situation

What all this means, in its broadest application, is that the entire world recognizes petroleum as the best fuel for heat, light and power and an absolute National necessity in time of peace and war. For this reason every Nation that is farsighted is trying to conserve its home oil resources and use the other fellow's supply as long as possible.

PIPE LINE VETERANS HOLD FIRST REUNION

BOWLING GREEN, Ohio, Sept. 29. Employes of the Buckeye Pipe Line Co. met in Bowling Green and held their first reunion and annual banquet in the Woman's Building. Among those present were O. S. June, former vice president and general manager; L. W. Page, superintendent; Matt W. Hainifan, M. J. Roach, John O'Brien, D. T. O'Brien, P. O. Hopkins, B. T. Jacobs, H. H. Fox, S. L. Carpenter, Tim McMahon, John Hussey, J. D. Kurtz, G. H. Ford, Clinton McCurry, George F. Kane and John Jennings.

Letters were read from D. R. Bushnell, of New York, president of the company, and from T. B. Greene, vice president and general manager. The 16 retired employes present were each called upon for remarks.

The length of service of those present ranged from 25 to 47 years. Only one had served less than 30 years, while their combined service amounts to 592 years. But one of them is less than 60 years young, while most of them are nearing the three score mark. One of the oldest traveled from Tulsa, Okla., and another from Hartford, Conn., to attend this reunion.

After the banquet it was decided to form a permanent organization, and the following officers were elected: P. O. Hopkins, president; Matt V. Hanifan, vice president and C. C. McCurry, secretary and treasurer; O. S. June, B. T. Jacobs and M. J. Roach were selected as committee on arrangements for the reunion and banquet next year which will be held in Lima, Ohio, on the second Saturday in September.

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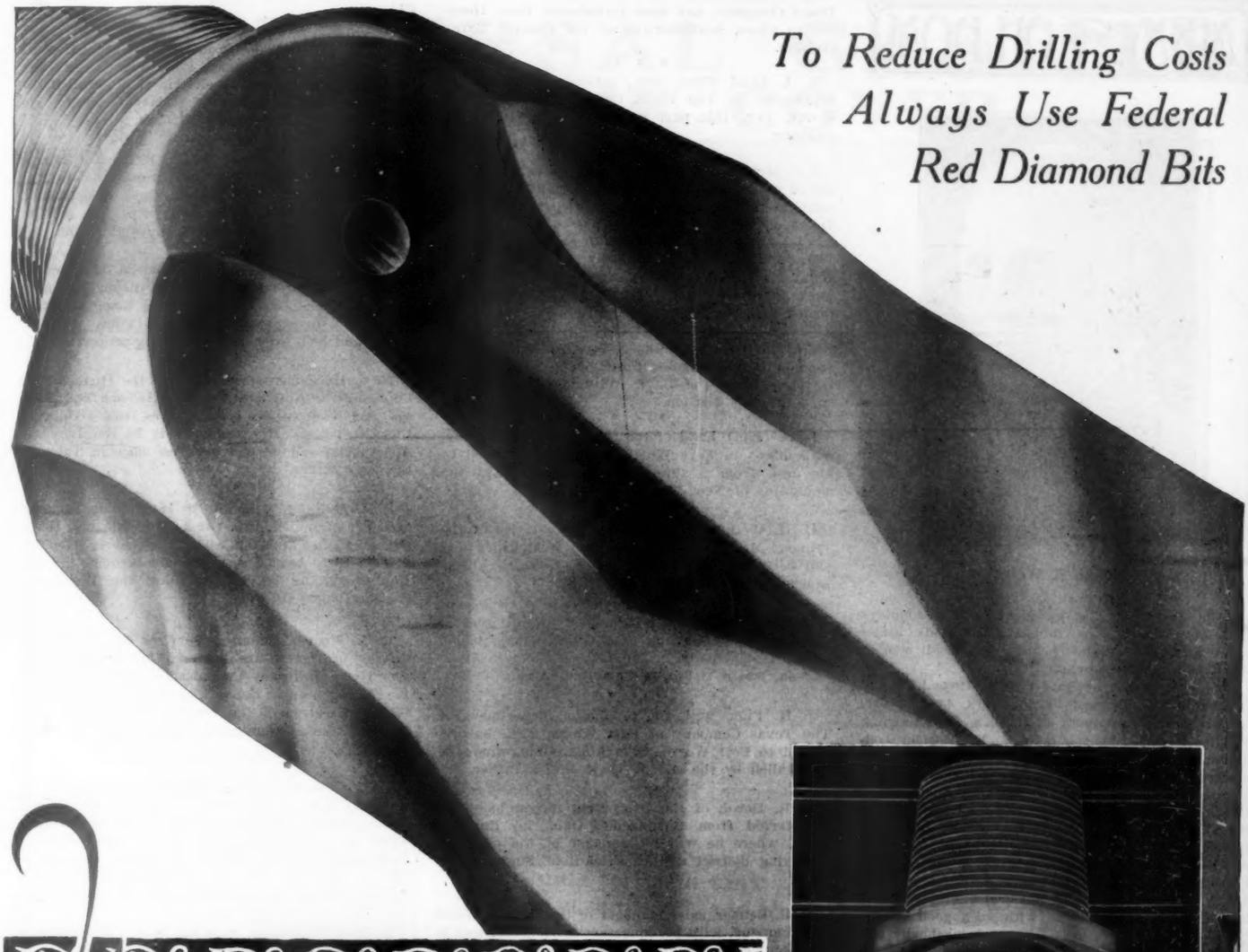

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Ralph E. Wertz

Ralph E. Wertz, vice president of the Producers & Refiners Corporation, in charge of lands, leases and contracts, is one of the best known oil men in the Rocky Mountain region.

Mr. Wertz began his career as a railroad man in Omaha, Neb. He was first a clerk, but he preferred more active work and became a brakeman and later a freight conductor and passenger conductor. It was while engaged in the latter capacity that he met Frank E. Kistler, who was then organizing the Producers & Refiners Corporation. Kistler recognized in Wertz qualities that were being wasted in the humdrum of running a passenger train and he made him an attractive offer and Wertz entered the oil business. With only a rudimentary knowledge of oil prospecting and production he devoted all his mental and physical energies to the mastery of his new work with such good results that he was successively advanced in authority and became generally recognized as a very able oil man.

At a recent stockholders' meeting in Cheyenne he was advanced to a vice presidency. His new duties will require that he spend a considerable part of his time in the Chicago general offices of the company.

PERSONAL PARAGRAPHS

F. D. Asche, vice president of the Standard Oil Company of New Jersey, in charge of foreign business, sailed for Europe Saturday.

* * *

Dave Lamb, drilling contractor of Tulsa, is in the Wyoming Field looking after oil interests in the Big Muddy and Salt Creek Fields.

* * *

James Anderson, Jr., of the Humble Oil & Refining Company, is in the Northwest, touring through Oregon and Washington on his vacation.

* * *

W. W. Fondren, one of the vice presidents of the Humble Oil & Refining Company, has returned to Houston, Tex., from a trip to the California fields.

* * *

J. J. Conry, general superintendent of the Carter Oil Company, western division, is in California studying conditions in the big flush fields of that State.

* * *

A. L. Garrett, sales manager for the Tidal Refining Company, has been in Chicago getting the new office at 800 Lakeside Building ready for business. T. F. Thompson is the manager of the Chicago office.

D. O. Bayless, of the land department of The Texas Company, has been transferred from Houston to Cisco, headquarters of the Central Texas division.

* * *

Y. A. Land, Cisco, Tex., attorney for the land department of The Texas Company, was in Fort Worth, Tex., this past week on business for the company.

* * *

J. C. McCue of Fort Worth, Tex., assistant manager of production for The Texas Company, is on a combined business and vacation trip to the South Texas oil fields.

* * *

Mr. and Mrs. W. L. Connelly, of Casper, Wyo., and their children, Harry and Elizabeth, left last week for New York, where the young folks returned to college.

* * *

E. J. Sullivan, of Casper, Wyo., and his family are now in Los Angeles, Calif., where Mr. Sullivan is representing the E. T. Williams Oil Company on a business mission.

* * *

L. D. (Lou) Ladd of the Carterett Oil Company, with offices in Fort Worth, Tex., has returned to his desk from a three months' vacation in the mountains of New Mexico.

* * *

H. H. Wotherspoon, special representative of the Trimont Manufacturing Company, is in Tulsa and will be in charge of the Trime tool exhibit at the International Petroleum Exposition.

* * *

Edgar H. Duke, of Davenport, Iowa, general manager of the Rabbits Foot Oil Company, which operates principally in the Garber Field in Oklahoma, was a visitor in Tulsa last week.

* * *

J. H. Finn, with the production department of The Texas Company at Fort Worth, Tex., has returned to Fort Worth, from Lima, Ohio, where he was called by the sudden death of his father.

* * *

C. E. Dowd, of the Frick-Reid forces, has been transferred from Bartlesville, Okla., to Rawlins, Wyo., where he will be manager of the southern Wyoming district of the Frick-Reid Supply Company.

* * *

R. E. Benner, sales manager of the Keen & Woolf Oil Company, with headquarters at Houston, was in the Southeastern States last week, making Atlanta headquarters while inspecting sales conditions in that territory.

* * *

H. W. Karnes, of the Ada Bell Oil Company, Batson Pool, Texas, has returned from a vacation in New Mexico, accompanied by Mrs. Karnes. Mr. Karnes is also interested in production in Oklahoma and Kansas.

* * *

E. B. Coolidge, vice president of the Homestake Oil Company and the Homestake Exploration Company, with headquarters in Great Falls, Mont., has been looking after Homestake interests in Wyoming fields of late.

* * *

Mr. and Mrs. Wirt Franklin have returned to Ardmore, Okla., from a three months' trip to Yellowstone Park, the Canadian Rickies, points in California and other places of interest in the western part of the country.

* * *

W. J. Milligan, assistant general superintendent of the Huasteca Petroleum Company, and in active charge, has returned to Tampico from a vacation trip of several months to Europe. He was accompanied by Mrs. Milligan.

* * *

Charles S. Beggs, of the accounting department of the Buckeye Pipe Line Company at Lima, Ohio, motored to Pittsburgh, Pa., last week and is visiting his former associates of the Southwest and Eureka Pipe Line Companies.

* * *

Miss M. Roessner, a well known distributor of petroleum products in Chicago and for several years with the Sinclair Refining Company, is about to re-enter the oil business and is proposing to re-establish a number of filling stations in a city near Chicago.

* * *

George P. Gleason, formerly with the Central Texas Petroleum Company, Fort Worth, Tex., has been appointed Federal receiver of the Central Gasoline Petroleum Company of Eliasville, Tex. He will assume his new duties at once.

* * *

C. E. Steidel, attached to the Bureau of Mines, at Washington, D. C., has been transferred to San Francisco, Calif., where he will devote his time to improving the bureau's monthly statistics on the refining industry in the Pacific Coastal region.

* * *

B. F. Shamburg, well known eastern oil operator, after looking over the Oklahoma fields for more than six weeks, has returned to his home at Titusville, Pa. He expects to return to Tulsa in a few weeks and look over some producing properties.

* * *

W. C. Morgan, representative of the Hughes Tool Company for Northern Texas, Oklahoma and Kansas, has removed his headquarters from Oklahoma City to Tulsa. His residence is in the Lorraine Apartments and he will open an office in Tulsa in the near future.

* * *

F. J. McNally, assistant to H. A. King, general manager of the Sinclair Oil & Gas Company, Houston, Tex., headquarters, has returned to Houston from a three weeks' scouting trip through the section along the border, including the Webb and Zapata County Fields.

* * *

R. L. Hoover, deputy supervisor of the first oil district of Texas, has tendered his resignation to the Texas Railroad Commission effective October 1. He has been in the service three years and was lately in charge of the Central Texas fields, with headquarters at Corsicana. No successor has been named.

* * *

E. P. Campbell, late deputy supervisor of oil and gas leases on Federal lands on the Pacific Coast, including Alaska, has been advanced to supervisor and placed in charge of the Denver, Colo., headquarters of the Bureau of Mines, Department of the Interior. He was succeeded in California by R. C. Patterson, formerly in the Wyoming Field.

* * *

J. Ross Thompson, who has been identified with the Lakeside Oil Company's refinery at Franklin, Pa., for the past three and a quarter years, first as assistant superintendent and then as superintendent, is to leave Franklin in another month. He has accepted a position with the Sinclair Oil & Refining Company in the lubricating department at Houston, Tex.

* * *

J. M. Reardon, general manager of the Penn Mex Fuel Co., has returned from Pittsburgh headquarters to Tampico. He announces that the Penn Mex will shortly have several more strings of tools in operation south of the Tuxpam River, the company, among other exploration projects, intending to go into its holdings in the Castillo de Teayo district and drill a test.

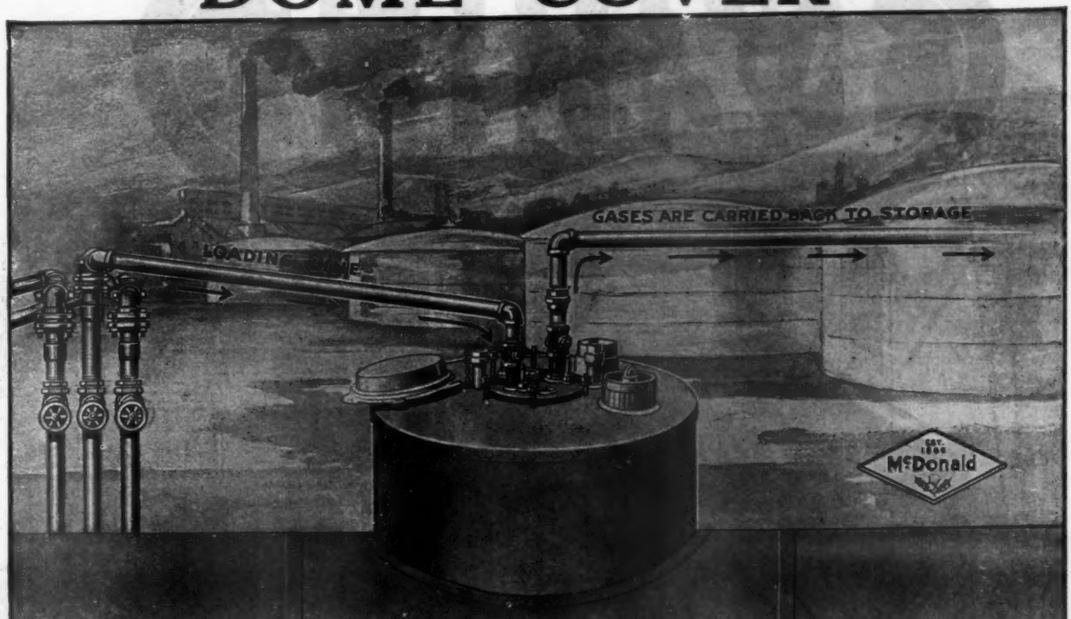
* * *

Ralph C. Rhoades and W. H. Thralls, geologists, have joined forces and have opened offices in Wichita, Kans. Mr. Thralls has been working independently since the first of the year. Mr. Rhoades recently returned from an eight months' stay in Egypt where he was investigating petroleum possibilities, a work carried on by Americans but financed by Egyptian capital.

* * *

Emby Kaye, superintendent of the gasoline department of the Skelly Oil Company, has returned to Tulsa from a trip to the California fields where he made a study of the various systems and processes for gasoline extraction used in the Pacific Coastal fields. He was particularly interested in California compressor plants and their economical operation, closed water systems, heat exchangers and condensers. He found the Californians equally interested in Mid-Continent methods which resulted in an exchange of valuable information.

UNIVERSAL GASTITE DOME COVER



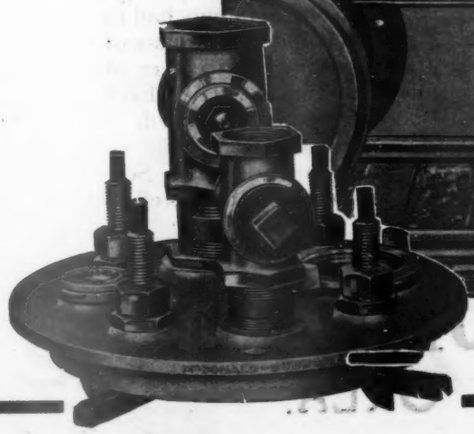
will be on exhibition in our booth at the International Petroleum Congress, Tulsa, Oct. 8 to 14—Booth No. 1.

If you are interested in saving 2 to 8 barrels of gasoline for each tank car loaded do not fail to visit our booth and learn the facts.

"One of the World's Oldest and Largest Makers of Oil Handling Equipment

A. Y. McDonald Mfg. Co.
Dubuque, Iowa
Branches:
Omaha Minneapolis Des Moines

McDonald



TRADE
E-Z-BILT
MARK

INTERNATIONAL PETROLEUM
EXPOSITION AND CONGRESS
TULSA - OKLAHOMA
OCT. 8 TO 14 1925

September 27, 1925.

The Braden Company,
Tulsa, Oklahoma.

Attention: J.G. Nicholson,
General Manager.

Gentlemen:

Please consider this our acceptance of the E-Z-Bilt Sectional Steel Buildings built to house the International Petroleum Exposition and Congress.

We wish to acknowledge our appreciation of the prompt and efficient manner in which you have handled this immense building program.

Yours very truly,

Edward F. McIntyre, General Manager,

INTERNATIONAL PETROLEUM EXPOSITION.

EFMcI-M

When the Housing Problems Came up

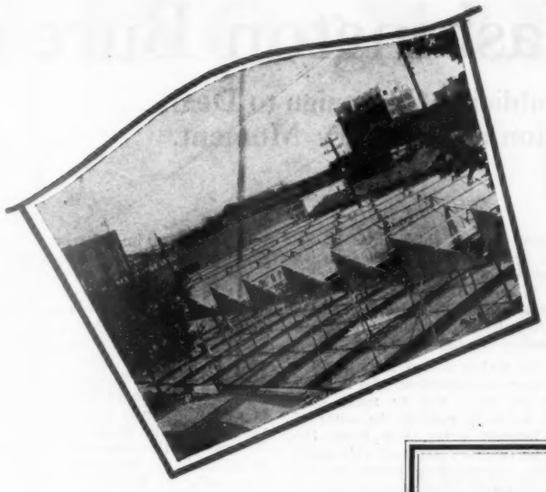
In connection with the International Petroleum Exposition and Congress

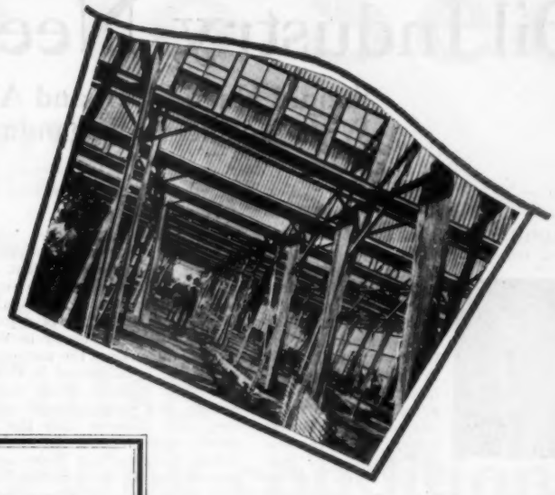
BRADEN built Sectional Steel Buildings were contracted for because of their flexibility, high salvage value and low cost. The buildings had to be erected within a short time and this process of erection, covering fifty thousand square feet of floor space, was accomplished in TWO WEEKS —four days earlier than the contract specified.

While visiting the Exposition—E-Z-BILT Sectional Steel Buildings will shelter YOU as well as the Exhibitors.

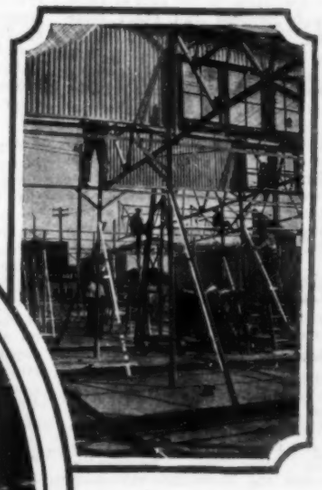
THE BRADEN COMPANY

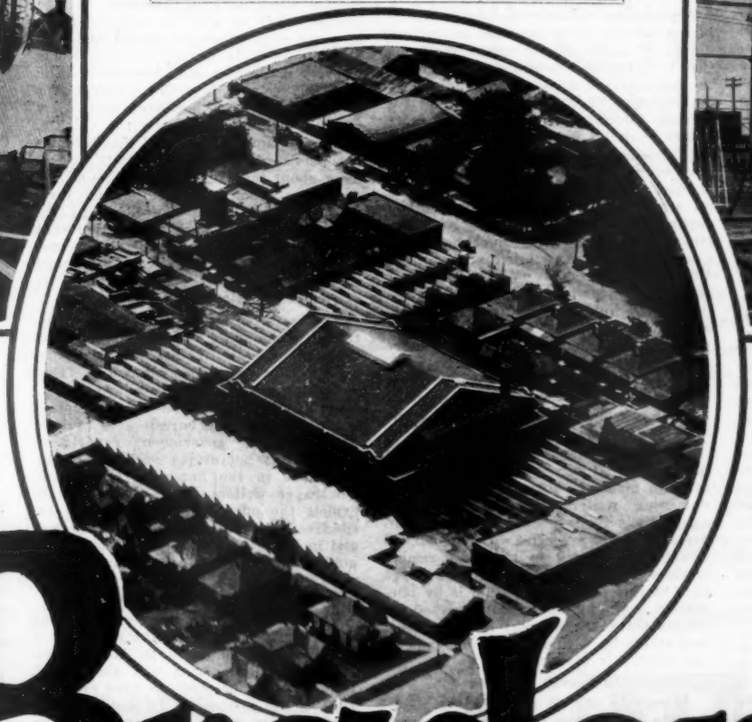
TULSA OKLA.





The pictures on these two pages show the exposition buildings in process of erection. The aeroplane view gives a fair impression of how the housing problems were solved.





Braden Built

SECTIONAL STEEL HOUSES

Oil Industry Needs Washington Bureau

Should Have Open and Aboveboard Publicity Campaign to Deal With Hostile Propaganda and Legislation at the Very Moment.

By Charles E. Kern

WASHINGTON, D. C., Oct. 1.—If the oil industry intends to protect itself by means of a publicity campaign in Washington a beginning should be made as soon as possible. What may be proposed in Congress for legislation affecting the petroleum industry no one can tell with certainty. With the hostile activities of Senator LaFollette and his followers it seems certain that if there is any opportunity to shy brickbats at the industry there will be no hesitation on the part of these gentlemen to propose and enact some legislation.

As has been pointed out by The Oil and Gas Journal the most likely opening for hostile petroleum legislation will be an attempt to foist the sins of the coal industry on petroleum. Although the coal strike has been settled for the time being that fact does not destroy the recommendations made by the coal commission which contemplate placing the coal industry under Government supervision with a fixing of conditions of employment and prices at which coal shall be sold. It is quite well understood that Senator LaFollette and his very potential following would like to treat petroleum as the Coal Commission proposes to treat coal.

Motor Organizations Busy

The paramount influence making possible the enactment of legislation hostile to the oil industry in the coming session of Congress will be public opinion. It must not be forgotten that the great automobile associations, representing more or less the 13,000,000 automobile owners, have gone on record in favor of some legislation by Congress in respect to the price of gasoline. Nothing that these associations have made public indicates whether or not they have any remote idea in respect to the kind of legislation that should be enacted. The controlling influences in these associations probably have no further purpose in demanding legislation to affect the price of gasoline than to show their membership that they are on the watch tower and are doing something for automobile owners to warrant the expenditure involved in the maintenance of their organizations.

Just here the oil industry ought to come to an understanding in respect to the nature of petitions that are sent to Washington by various kinds of organizations claiming to act in the interest of consumers of petroleum and its products. The fact is, in spite of adopted resolutions, such organizations do not represent the membership. Every one knows how some energetic gentleman climbs into the limelight by offering a resolution and proposing its adoption in an impassioned speech. In the case of the oil industry, no special glory is held out as an inducement to any one to oppose the adoption of such a resolution and it generally gets through with a unanimous vote before a baker's dozen of the members present realize what it is all about. The resolution is then sent to Congress by the organization's secretary and by that means is eventually laid before the Senate and House of Representatives creating an impression of public opinion far beyond its deserts.

Specter of Public Opinion

The truth is, the oil industry ought to present to Congress the facts showing how great organizations, often representing hundreds of thousands of members in the aggregate, adopt resolutions that are falsely claimed to represent the body of members. This should be some of the work in charge of a publicity bureau for the oil industry in Washington. If one will analyze the methods by which legislation is influenced in Congress they will soon discover that alleged public opinion is a most powerful influence and they will discover that the specter of public opinion that is made to stalk before Congress and scare senators and representatives into voting is no more real than the old time ghost that inhabited the deserted farmhouse. However, the ghost scared the children and frequently the grownups, just as the specter of public opinion has frequently scared Congress into the enactment of legislation that a few years later was shown to be not only useless but mischievous.

Misleading Propaganda

A petroleum publicity bureau in Washington should show up the misleading nature of much of the trashy comment that is distributed in newspapers against the industry and it should so handle news developments that the public may be informed through the medium of facts rather than by ill-founded and misleading statements. The greatest place in the world to do this is within the shadow of the dome of the capitol. In no other city are there so many newspaper and magazine writers. No other city is the source of so much news and comment on news, printed all over the United States, as is Washington. It should be understood also that Congress is greatly influenced by the comments and news telegraphed from this city and printed in the home papers of senators and representatives, being to a large extent the information upon which their constituents form opinions which are later reflected back from the home town or county.

Over 200 newspapers are represented here by special correspondents and many of them maintain bureaus which employ numerous writers. The several press associations furnish a more or less comprehensive news service to about 5,000 newspapers located in the most remote sections of the country. A very large part of this news distribution is by telegraph, some by the cheap method of "boiler plate" for economy in typesetting, and others by various forms of syndicating news.

In Search of News

If men in the oil industry would undertake to visualize this great newspaper and magazine activity under the very shadow of the dome of the capitol they would see hundreds of men circulating about the galleries and the lobbies of both Senate and House of Representatives in search of material with which to make their dispatches when they reach their offices later in the day. The sessions of both Senate and House of Representatives are a small part of the work of these correspondents. Scores of committees are meeting every day and scores of subcommittees working on legislation in initial stages make for the energetic correspondent a task that is really endless and beyond the power of the most energetic to fully perform. Many important events of necessity must be handled in a more or less superficial manner. The desire of the correspondent is two-fold, which embodies the desire to prepare a readable news story and to give a correct account of that which is taking place, all of which involves an element of bias according to the policies and prejudices of his home paper with which he is quite familiar. But paramount is the element of interesting news, that which will attract attention and compel reading by the busy man.

All of this makes a very busy day for the newspaper correspondent who is often placed at his wits' end to make sure that he is actually getting the news of essential interest every day from the vast field he covers. Right at this point is met the commanding power of organized publicity. The special interest that can furnish to the correspondent promptly and accurately from day to day a running account of what is taking place affecting his particular subject will be welcomed in every news bureau and office here.

Need for Antidote

The foregoing should indicate just what a publicity bureau should do. The hostile elements are generally on the ground ready to give out every feature of news with a hostile appeal and this hostile appeal is usually quite welcome in every newspaper office because it deals in highly colored invective which makes good material for headlines and spicy reading all the way down the column. Every newspaper in the United States has published Senator LaFollette's statement about the danger of gasoline selling at $1 per gallon as a result of the direful "machinations of the Standard Oil companies," but probably not 1 per cent of the publications that sent that sensational charge broadcast every attempted to print thoughtful comment upon its extreme and sensational nature.

The news bureau needed by the industry in Washington is not different from the news bureaus maintained here from time to time by various interests. There is nothing wrong, either morally or otherwise, about the operations of a properly conducted publicity bureau here or elsewhere. Every government department in this city maintains such a bureau. They are in the hands of experienced newspaper writers whose duty it is to exploit the official activity of their respective departments in a favorable way and in language of the style commending publication in newspapers and magazines.

Nothing Surreptitious

There should be nothing surreptitious about the petroleum publicity bureau if one is ever established in Washington. It should all be open and aboveboard. Efforts should be made to have everyone know of its existence. It should inspire confidence in every newspaper office by the reliability of its statements and it should be made welcome by being prepared in a most attractive form from the standpoint of the live newspaper.

This bureau should see that events of the day affecting petroleum are delivered with great promptness to the offices of the newspapers. It should interpret these events with reasonableness and fairness and it should prick the ridiculous bubbles that are so often sent over the country in the form of a demagogical address in the Senate or House of Representatives. It should lay alongside of sensational statements reliable facts and permit them to counteract the force of misrepresentation at the very moment the misrepresentation is initiated.

Such a publicity bureau will prove worse than useless unless it is conducted by the very best talent available. The publicity man who thinks he is accomplishing something by liberal use of abusive adjectives in referring to the men whose influence he is endeavoring to counteract will soon brand himself as one who is so prejudiced that his publicity service cannot be acceptable to the newspapers most necessary to reach. In analyzing misleading statements either made by witnesses before a committee or by senators or representatives the publicity bureau should have the assistance of men who really know from experience the truth of the matter commented upon. Because of this necessity the man who is skilled in the presentation of news will frequently not have the necessary knowledge, which will make necessary the presence of men who really know about the questions under dispute.

Must Act at the Moment

A news bureau while quite necessary, if interested industries are to be taken care of in the public mind, is a rather expensive agency. Either its work should be done well or not attempted at all. It must be done at the moment events are happening. The old and stupid method of having a pompous, extremely dull and uninteresting statement issued by some official of a corporation several weeks after the interest in the subject has ceased to exist should not be adopted. The plan of putting out these sort of corrective statements has not been altogether abandoned and every newspaper office receives them, put up in the highest art of the printer, on most expensive paper, but so delayed and so unavailable in style that the waste basket becomes their sole receptacle.

Above all, the oil industry should bear in mind that legislation is not always the result of deliberation on the part of legislators. As one of these gentlemen remarked to the writer, if he voted against a certain bill which he believed to be useless, if not vicious in its effect, no one would ever thank him but he would be condemned and fought by powerful organizations; whereas if he voted for it he would receive grateful appreciation and be presented with a bouquet of flowers by a delegation representing the particular propaganda that was putting over the bill in question. He had only a remote interest in the fact that if his constituents were properly educated along lines of correct thinking they would not wish him to vote for the measure at all. We have a representative government but it frequently represents organized propaganda rather than the sober judgment of the thoughtful constituents in their homes. Intelligent publicity bureau work right here in Washington would have an immense effect in breaking the back of propaganda based on prejudice and misinformation. In that way it would operate as a reflex movement on Congress and induce calm deliberation in the framing of any legislation that might endanger the welfare of the entire petroleum industry.

SEEK GAUTEMALA OIL

A new petroleum company, the Gautemala Oil Corp., has been organized in Gautemala City with American, Central American and Mexican capital. The company is capitalized at $5,000,000, one-fifth of which is said to have been paid in. Oil land holdings comprise 843 hectares in the northwestern part of Gautemala and 50,000 at Gracias-a-Dios. A geologist and drillers already have arrived to supervise the work, while another geologist is in the United States for the purpose of purchasing machinery necessary for operation.

Be Sure to See

GAS-TITE DEVICE

at the

Petroleum Exposition Tulsa

under working conditions

INTERNATIONAL PETROLEUM EXPOSITION AND CONGRESS TULSA, OKLA. OCT. 8-14

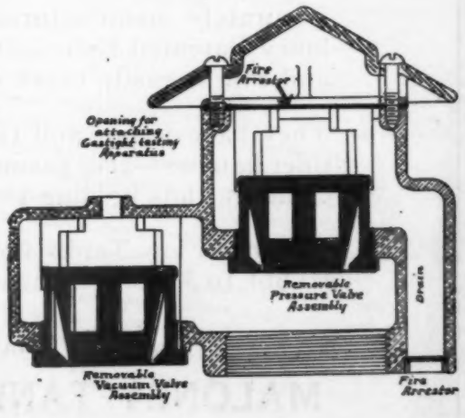
Automatic Pressure Vacuum Valve with Manometer made entirely of aluminum and brass, no gaskets, easy to install, always works, pressure releases at 2¼ ounces, Vacuum at 1½ ounces; gauze fire arresters.

Our Automatic Pressure-Vacuum Valve and our other devices will be shown at the International Petroleum Exposition to be held at Tulsa, Okla., on October 8th to 14th, under as near actual working conditions as it is possible for us to arrange.

Booth 13

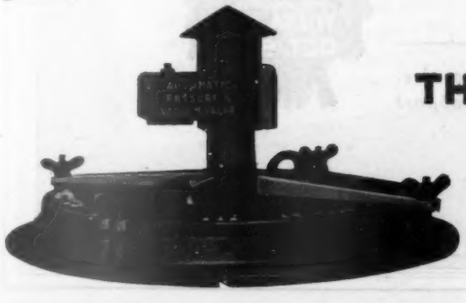
Ready to install at once. Bolts, nuts, gaskets and nipples come with each shipment, making it possible to install with only a screw driver and monkey wrench after the holes are bored.

The experiments of this Company have been carried on with actual field tests, under real working conditions. As a result Gas-Tight Devices are mechanically perfect and practice proven.
They prevent evaporation and conserve the quality of your crude.
They enable you to know when your tanks are actually gas tight, you do not have to guess about it. With Gas-Tite Devices you can know at all times.



Gas-tite Man Holes and Thief Rings—

GAS-TITE Man Hole and Thief Hole Rings and Covers Insure Your Tanks Being Permanently Gas Tight. Both covers made of aluminum with smooth machined surface which forms gas-tight seal when in contact with gasket.



THE GAS-TITE DEVICE CO.

PAWHUSKA, OKLAHOMA

If you are not coming to the Convention send for an illustrated circular fully describing all these valuable gravity saving and fire proof devices.

1,500-Bbl. Maloneys—Signal Hill District California

Patented Crimped Offset Seams and Joints

MALONEY TANKS

Give You Efficient Crude Storage

They Are Made of KEYSTONE COPPER STEEL RUST-RESISTING

Accurately manufactured of Keystone Rust Resisting Copper Steel, the Maloney Patented Bolted Steel Tank furnishes the producer with long life storage and can be easily taken down and reset at minimum cost.

They have Vapor and Gas Tight Decks with packed joint manholes and tight thief hatches—also vacuum-pressure valves, insuring no evaporation, no air circulation, thus holding the gravity of oil as produced at well.

Maloney Flow Tanks adequately take care of your big well production. Sizes 60-bbl. to 3,000-bbl., inclusive.

MANUFACTURED BY

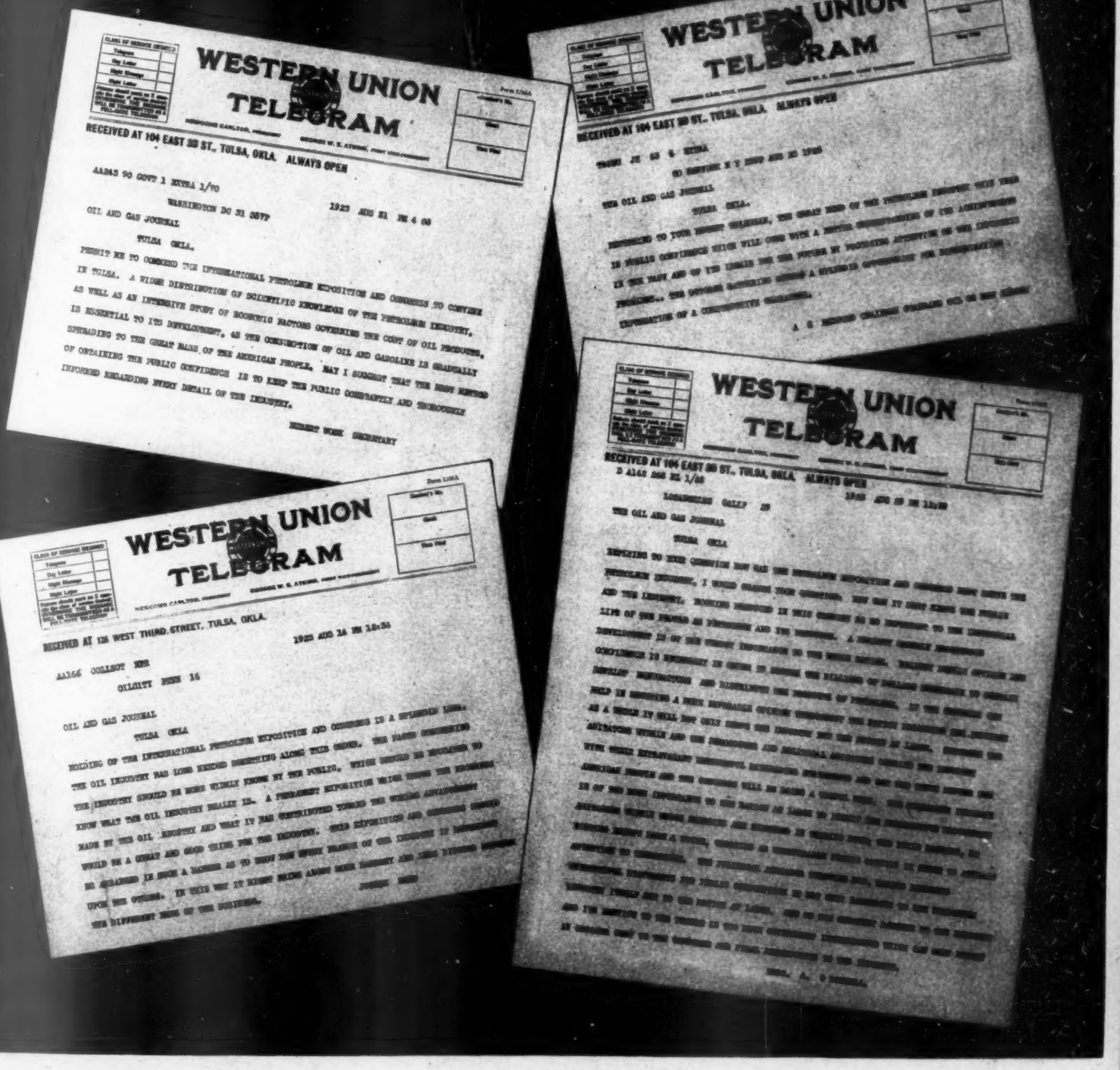
MALONEY TANK MANUFACTURING CO.

Office and Factory—**Tulsa, U. S. A.**

INTERNATIONAL PETROLEUM EXPOSITION AND CONGRESS TULSA, OKLA. OCT. 8-14

Modernly equipped Export Department gives prompt and dependable service. Tanks, knocked down, securely packed in steel-bound crates, easily handled at port

The OIL and GAS JOURNAL
Rotogravure Section
OF THE
INTERNATIONAL PETROLEUM EXPOSITION AND CONGRESS
TULSA, OKLAHOMA OCTOBER 8TH-14TH, 1923



The National at the Exposition

H. G. TRIMBLE
MANAGER OF SALES

J. A. GEISMAR
ASST GENERAL MANAGER

P. N. BOGGS
VICE PRESIDENT & GEN. MANAGER

J. H BARR
PRESIDENT

C. C. CARTWRIGHT
DIVISION MANAGER
THE NATIONAL SUPPLY CO. of TEXAS

I. G. WETHERILL
DIVISION MANAGER
THE NATIONAL SUPPLY CO. · · MIDWEST

O. T. DAWSON
GENERAL DISTRICT MANAGER
THE NATIONAL SUPPLY CO. · · MIDWEST

The Era of Oil

By W. T. Anderson

THE first International Petroleum Exposition and Congress, to be held at Tulsa, Oklahoma, the oil capital of the world, the center from which and to which the activities of this great industry lead, was a happy thought just at this time, to remind a complacent age of ***the source and sustenance of its progress.***

To two generations, of which we have survivors, oil was a liquid sold in a can for lamps. To the present generation it is a fluid bought at filling stations to run our motor cars. And there popular thought about petroleum begins and ends.

Yet this is the Era of Oil. It is the dominant factor in our civilization, the most generally used and most indispensible element in our industrial and social system. Without lubricants our vast machinery would stop. Without gasoline we would be thrown back a quarter of a century to the days of the horse and buggy and the team and wagon. Petroleum has not only greased the wheels of progress but it has furnished the propelling power. ***It has not only speeded up industry but it has created new industries greater than any that existed.*** Petroleum refining itself is the second largest of our national industries and the manufacture of automobiles, which it alone made possible, is third. Yet to a generation that has seen its evolution day by day the significance and marvel of its growth has seemed commonplace, accepting the benefits without a thought for the genius and enterprise, ***the risk, hardship, and skill that made this progress a realization.***

Once in a while we may pause to express wonder at the multiplication of the automobile, an invention at which we turned to stare open-eyed less than 30 years ago but now so common it requires the keenest eyesight to dodge them on the streets and highways. Occasionally the more thoughtful of us may remark upon the magic which enables us with a few gallons of liquid, purchasable for a dollar, to transport ourselves over hill and dale for distances we used to think unattainable in a day's journey. We read of gigantic steamships making new records across the oceans, propelled by oil; of our largest buildings heated by the same fuel, displacing the grimy and bulky coal, of airplanes spanning the continent in a day, of Diesel engines revolutionizing our power systems, but how often do we think back to the great industry that has made these achievements feasible?

"Expositions," said the lamented McKinley at Buffalo on the eve of his assassination, "are the timekeepers of progress." Primarily they are designed to be educative. ***Surely never was there an exposition more educative than this of Petroleum.*** Here is a natural resource of which the bulk of people have but the most fragmentary knowledge, hardly the most elementary information. Oil comes out of the ground and its products are obtainable at every crossroads. But ***what a world of romance, of research, of ingenuity, of industrial and commercial activity and ability, lies between?***

The International Petroleum Exposition will show oil practically from its genesis to gasoline. Geological exhibits and charts, arranged by "rock hounds," will make plain the subterranean secrets of oil's hiding places. Historical exhibits will trace the development of the use of oil from the seepages of the days of Herodotus to the mile-deep holes of modern California. There will be actual demonstration of the, to a layman, bewildering assortment and variety of equipment and tools used in bringing the golden wealth to the surface. Models will recall the primitive methods of the ancients, of the pioneers of Oil Creek, side by side with the mechanical marvels of the present day that enable drillers to penetrate more than a mile deep. The mysteries of refining that put the alchemists of old to shame will be revealed by exhibits that will follow the crude from process to process, through all its various evolutions, into ***the ever-perfecting product that transports millions upon millions of people and of tons unending miles daily.***

Other expositions have been built upon some historical fact or the glorification of some section or nation, but this exposition of Petroleum will celebrate ***the achievement of Man in wresting from Nature its longest hidden resource*** that, more than any discovery or invention, has set the world centuries ahead in the brief span of a Scriptural lifetime. Nor should this year's exhibition be its climax. The Era of Oil is but beginning. The miracles already wrought will doubtless be far exceeded as production and refining move to higher efficiency and wider evolution. A year hence who shall say, in view of what has been accomplished, ***what new wonders the Petroleum Industry may have to place before an astounded world?***

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TULSA, OKLAHOMA OCTOBER 8TH-14TH, 1923

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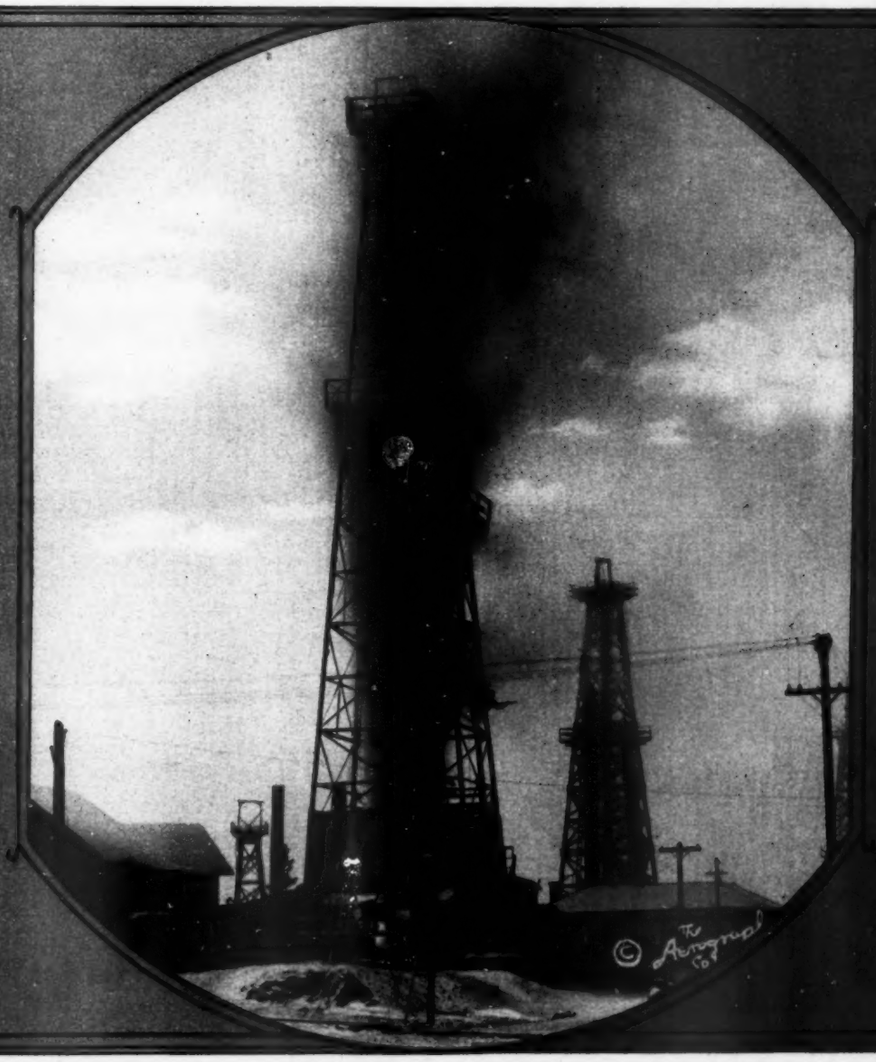

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7,000,000,000 Barrels of Crude Oil

Nation's Production Has Kept Ahead of Swiftly-Moving Automotive Industry. Preparing For The Future.

By James McIntyre

Some time in the fall of this year the United States will have produced seven billion barrels of crude petroleum. It took 41 years and 4 months to produce the first billion barrels, but about 1 year and 7 months will be consumed in the production of the seventh billion.

Beginning with August 27, 1859, and up to December 31, 1900, only 1,003,600,000 barrels of crude oil had been produced in the United States. Now that we are well on the way to our seventh billion barrels it seems almost incredible, at first thought, that in less than 23 years we will have produced six times as much oil as we did the previous 41 years. The year 1900 will not seem very long ago to many of our readers. It was within the automobile period. Cars to the number of 13,824 were registered in the United States that year, having grown steadily from the 300 registrations noted the first year a record was kept of the number of motor vehicles, which was in 1895.

There was plenty of crude to go around in 1900, as there had been before that time, but the demands made upon the oil men by automobile owners and other users of internal combustion engines made it necessary that the oil industry go out and find production, and it did so to such a degree that by January 31, 1909, it had passed its second billion barrel mark, taking only 8 years and 1 month to do it. In that year automobile registrations reached 311,000.

The third billion barrels of crude was reached in 4 years and 8 months, or by September 30, 1913, in which year the automobile registrations had increased to 1,287,000, and still the production of oil was enough to yield all the gasoline needed for the tremendously increasing number of cars.

A Lively Contest

Only 3 years and 6 months passed before the fourth billion-barrel mark in crude production was reached. This was on March 31, 1917, and the automobile registrations that year were 5,101,000, over 4 times what they had been in 1913. By this time all the big Eastern fields had been developed. Kansas was supposed to have seen its best days; the Glenn Pool, Healdton and Cushing in Oklahoma were past their peak and the industry asked "where next?" Butler County, Kansas, answered with the Towanda Pool, opened in June, 1917, and by the time this subsided the Central and North Texas fields began their history-making record of production and numerous other smaller developments helped to shorten the time between the fourth and the fifth billion barrels to 2 years and 10 months, bringing us up to January 30, 1920. In that year automobile registration was 9,118,000, with plenty of oil to yield the necessary gasoline and plenty more in prospect. Oklahoma, California and Texas production was on the increase; Louisiana and Wyoming were going strong and the Arkansas field had come in as an added factor. Even the old fields of the East refused to quit, and in two years and 10 months the sixth billion barrel of oil had been produced. This was on March 31, 1922, and in that year the motor car registration was 12,238,000.

Even this number of cars was not sufficient to embarrass the oil producer. The new fields of California, the like of which the world has never seen at one time, and may never see again, are largely responsible for shortening the period between the sixth and seventh billion, and it is expected that some time this Fall the latter figure will have been reached, using about 1 year and 7 months to make the record. California has been very materially helped by Oklahoma and Texas, where new fields, that compare with the best high grade oil regions in history, are being developed, and while the automobile industry is turning out more cars than it ever has done before, and the growth in registration may bring the total above 15,000,000 for the year, there has been more crude oil than the public can find use for.

The year 1923 will see well over 650,000,000 barrels of crude produced in the country and over 3,000,000 motor cars and trucks manufactured. The crude produced this year will yield about 7,000,000,000 gallons of gasoline and the cars and the trucks made this year will burn nearly all of it.

It took 19 years for the registration of cars and trucks to reach one million. In the twenty-eighth year alone three times that many will be manufactured.

Accompanying this is a graphic chart prepared by Charles E. Bowles, petroleum statistician and author, illustrating the growth of the annual production of crude petroleum in the United States from 1859 to the present year and the annual registration of motor vehicles since 1895. In 1895, when motor car registration began, the annual production of crude oil in the United States was 52,892,276 barrels. In that year 300 cars were registered. In 1922 the production of crude in the United States was 563,375,000 barrels, and the number of cars registered was 12,238,000. Thus, while the annual production of oil increased about 11 times, the motor car registration was multiplied 40,793 times.

Automobile Big Factor

Mr. Bowles graphically shows the influence of the automobile industry on the business of producing crude petroleum, which we may supplement with some figures on production. In 1865 the annual crude production was 2,497,700 barrels. In 1875 the production was 8,737,514 barrels. In 1885 it was 21,858,783 barrels, and in 1895, 52,892,276 barrels. Then came the automobile.

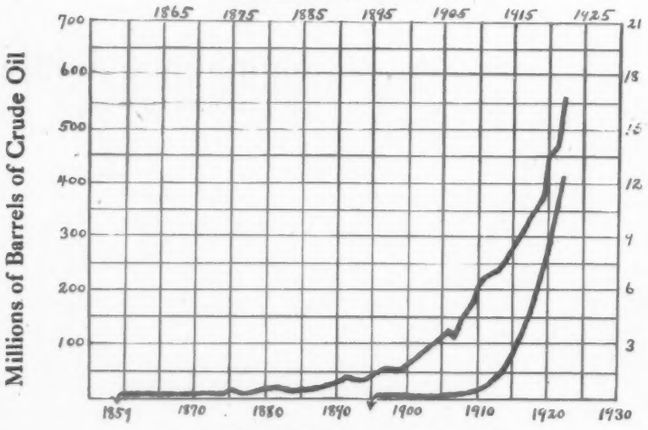
The 1905 motor car registration was 77,988 in the United States. Crude production in that year was 134,717,580 barrels. In 1915 the motor car registration was 2,545,000 and crude production 281,104,104 barrels. In ten years the percentage of gain in crude production was only 109. Seven years later, or in 1922, the motor car registration, 12,238,000, was a gain over the 1915 registration of 381 per cent, while the crude production of 563,375,000 barrels was only 104 per cent over the output of 1915.

The question may naturally arise as to how such a relatively small percentage of gain in crude oil production could care for the tremendously increased percentage of automobiles and trucks consuming gasoline, and the answer is in refining and automotive efficiency. The advent of the internal combustion engine caused a revolution in the refining business. The industry met the need thrust upon it. In this it had the hearty cooperation of the automotive industry. Intense research work and the inventive genius of the highly trained men in both trades has made a barrel of crude petroleum go farther and farther in efficiency as the years passed.

In the future, when oil production has gone over the crest, and is on the decline, refinery efficiency and the ingenuity of the automotive engineer must continue to make diminished production of crude oil fill the country's increasing needs for motor fuel. Both industries have long since foreseen this and have been bending every effort to be prepared for it. The day of wastefulness in the oil industry has passed, never to return. Qualitative, rather than quantitative, crude oil; the highest efficiency in refining methods, which will extract the last drop of motor fuel from the oil produced, and ways and means of increasing the propelling power of the fuel, looking towards economy in the use of gasoline, will take the place of the free and easy conditions of the past.

The Petroleum and Motor Vehicle Industries

CHARLES E. BOWLES

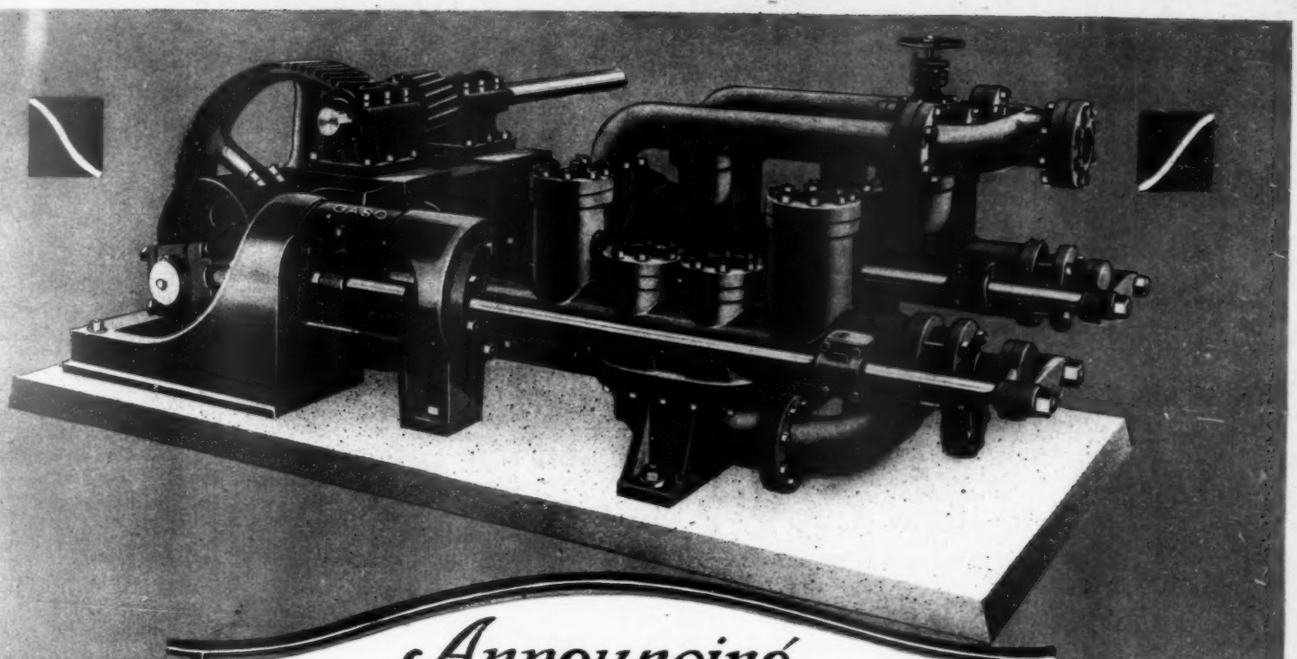


Crude Oil Production in United States

1st	Billion Bbls.	Aug. 27, 1859, to Dec. 31, 1900	1,003,600,000 Bbls.	in 41 yrs.,	4 mos.
2nd	Billion Bbls.	Jan. 1, 1901, to Jan. 31, 1909	2,000,400,000 Bbls.	in 8 yrs.,	1 mo.
3rd	Billion Bbls.	Feb. 1, 1909, to Sept. 30, 1913	3,007,500,000 Bbls.	in 4 yrs.,	8 mos.
4th	Billion Bbls.	Oct. 1, 1913, to Mar. 31, 1917	4,001,100,000 Bbls.	in 3 yrs.,	6 mos.
5th	Billion Bbls.	Apr. 1, 1917, to Jan. 31, 1920	5,023,100,000 Bbls.	in 2 yrs.,	10 mos.
6th	Billion Bbls.	Feb. 1, 1920, to Mar. 31, 1922	6,038,300,000 Bbls.	in 2 yrs.,	2 mos.
7th	Billion Bbls.	Apr. 1, 1922, to Fall, 1923	7,000,000,000 Bbls.	in about 1 yr.,	7 mos.

Motor Vehicle Registration

1895	300	1909	311,000
1896	900	1910	463,000
1897	2,100	1911	639,000
1898	4,600	1912	944,000
1899	8,624	1913	1,287,000
1900	13,824	1914	1,773,000
1901	20,590	1915	2,545,000
1902	28,755	1916	3,678,000
1903	38,083	1917	5,101,000
1904	57,864	1918	6,064,000
1905	77,988	1919	7,539,000
1906	106,000	1920	9,118,000
1907	142,000	1921	10,524,000
1908	197,000	1922	12,238,000



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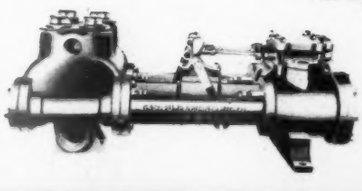
GASO PUMP & BURNER MFG. CO.
Tulsa, Oklahoma

No. 407



Visit our Exhibit at the PETROLEUM EXPOSITION, Tulsa,
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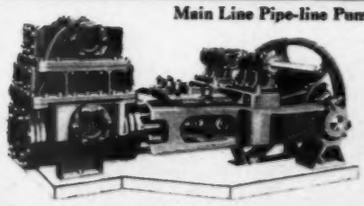
Main Line Pipe-line Pump



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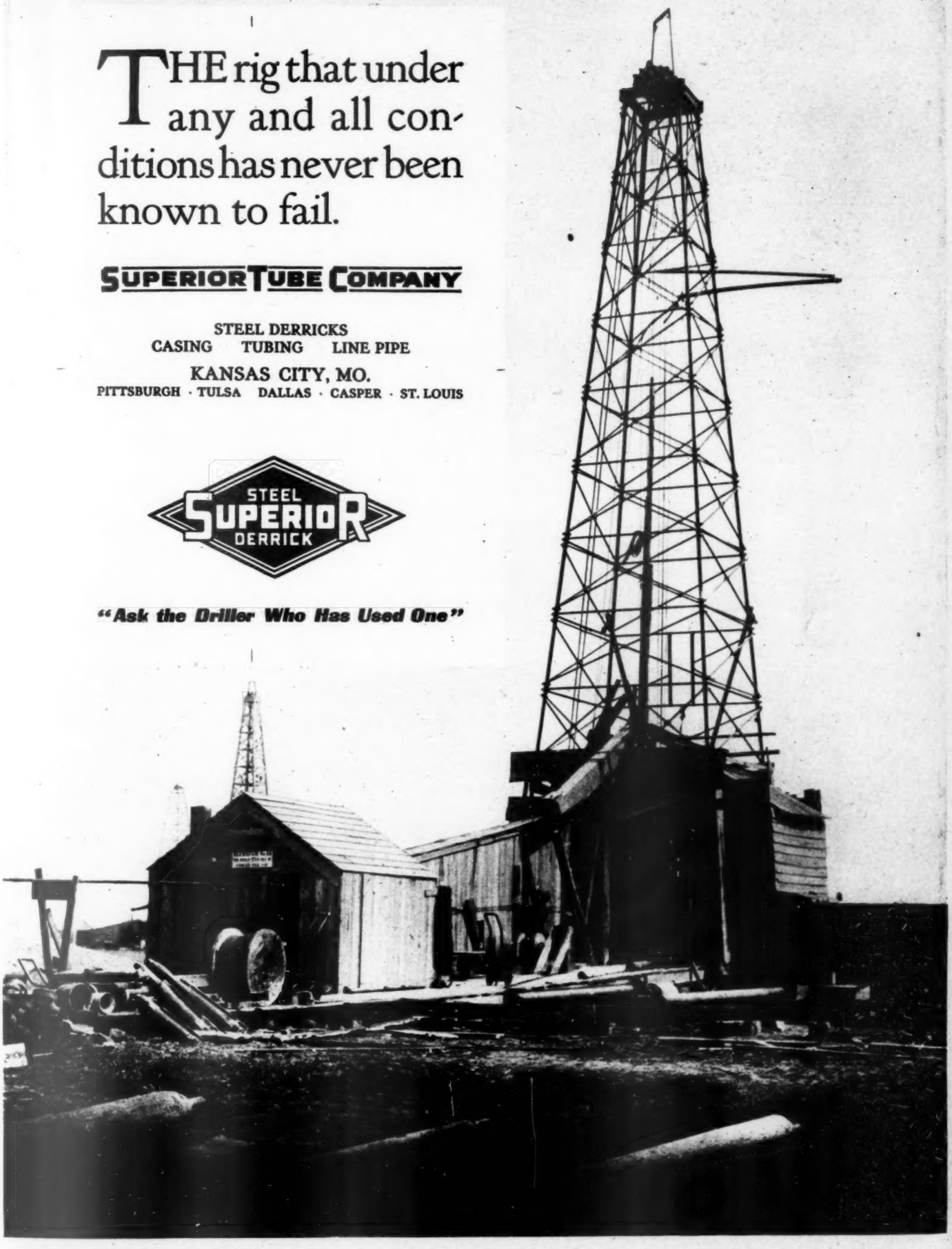

Bazaar
8-14
Foremost in the market
place of every oil field
west of the Father of
Waters—the Frisk Rod
Supply Company. See
their booth at Babylon
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Usefulness of the Bureau of Mines

The Petroleum Industry Has Been Directly Benefited by the Work of this Important Branch of the Federal Government

By F. B. Tough
Chief Petroleum Engineer, U. S. Bureau of Mines, Department of the Interior

The Act of Congress, establishing the Bureau of Mines, as amended in 1913, authorizes the Bureau to conduct investigations with a view to improving health and safety in the mineral industry and to increasing efficiency in the development and utilization of mineral resources. For commercial and legal purposes the petroleum and natural gas industry has come to be considered as a part of the mineral industry and in recent years the Interior Department, through the Bureau of Mines, has devoted a constantly increasing amount of attention to this industry.

For the sake of efficiency, the petroleum work of the Bureau is organized in one division, which brings the various phases of this work in close contact with each other. The work may be divided into two general classes, investigative or research work on the one hand and supervisory work on the other. The Bureau has no police power except as to operations on Government-owned land, and takes no little pride in the voluntary cooperation so generally extended to it by the industry. A good illustration of this cooperation is the fact that, since the passage of the Leasing Act, nearly four years ago, the Bureau of Mines has been supervising operations on Government land, involving many millions of dollars, employing thousands of people, and scattered over a vast territory, without having to recommend the cancellation of one lease or permit for non-compliance with a reasonable standard of operations and only twice has it become necessary for the Bureau to temporarily shut down operations on a lease in order to obtain compliance with such a standard.

The investigative work on petroleum is developed through field offices and stations conveniently situated with respect to the oil fields and refineries. The largest of these stations is at Bartlesville, Oklahoma, and is supported by Federal and State appropriations. This arrangement illustrates the flexibility of the Bureau's organization whereby it is able to engage in co-operative investigations with suitable agencies or people in regard to matters of public interest. In this way a close contact between the oil work of the Bureau and the industry is maintained.

Petroleum Statistics

One of the important services rendered by the Bureau to the industry is the collection and dissemination of valuable information. This is done by the publication of bulletins, technical papers and periodicals. The results of the semi-annual gasoline survey that have been published since 1917 give valuable data to the refiners, marketers, and users of gasoline. A monthly periodical issued by the Bureau deals with refinery statistics of the United States, covering stocks, production imports and exports, as well as indicated consumption of gasoline, kerosene, gas and fuel oil and lubricants. A set of curves, representing these data are issued quarterly. While it is clearly recognized that the financial resources of the refining industry have been seriously taxed by the enormous increase in gasoline stocks, which reached about 1,330,000,000 gallons last April, it is important to observe that the new supply of gasoline produced and imported in June, 1923, was 22% greater than for June of last year, but the demand in June, 1923, was 26% greater than for the corresponding month last year. It appears, in general, that the yearly production of gasoline is just about keeping pace with the increase in demand. Naturally this requires a much greater storage capacity in order to accomodate the fluctuations in seasonable demand. It has been very trying on the industry to meet these demands for additional storage of crude and refined products during a period of over production of crude and depression in price. The resourcefulness displayed by the oil men and their open dealings with each other and the public in regard to these common problems argues well for their solution.

Petroleum Specifications

The Bureau has given considerable attention to developing specifications for petroleum products for use by various Government Departments and Agencies. The necessity of purchasing Government petroleum requirements by specification instead of trade name became obvious during the war and is considered beneficial as well in times of peace. Many State Governments, cities, and large consumers are inclined to adopt specifications announced by the Federal Government, thus greatly increasing the importance of these specifications to the industry. The final test of desirability for any commodity depends on a balance between its service and its cost. While the cost of producing various petroleum products can be determined with satisfactory accuracy, it is far more difficult to determine an approximate measure of their relative desirability. The nature of the products themselves and the manner in which they are used makes it very difficult to state specifically the character-

F. B. TOUGH

F. B. Tough is the Chief Petroleum Engineer of the Bureau of Mines, Department of the Interior. Mr. Tough holds the degree of Engineer of Mines from the School of Mines, Columbia University, New York. Before entering the service of the Bureau of Mines, he had several years' experience as resident geologist for the Southern Pacific Company in various oil fields in California. After coming with the Bureau of Mines, Mr. Tough specialized in problems dealing with the exclusion of underground waters from oil and gas wells. He was in charge of conservation work in the Wyoming oil fields, under the co-operative agreement between the Bureau of Mines and the Rocky Mountain Petroleum Association. He was later appointed United States Supervisor of Oil and Gas Operations under provisions of the General Leasing Act.

Photo by Harris & Ewing

DORSEY A. LYON
Assistant Director and Chief Metallurgist of the Bureau of Mines

T. E. SWIGART
Superintendent of the Petroleum Experiment Station of the Bureau of Mines, at Bartlesville, Okla.

istics that should be possessed by a gasoline, lubricating oil, or grease, in order to make it satisfactory. Clearly, any attempt to do this must specify the use for which the product is intended. In certain kinds of Government work, special qualities of petroleum products seem to be essential. These are clearly set out in the specifications. In the adoption of Government specifications by other consumers it is important to correctly interpret the specifications to their use. To illustrate by an extreme case, fighting grade of aviation gasoline should not be specified for use in a motor truck or in a farm tractor.

Another and equally difficult phase of the specification work is to express in terms of laboratory tests, that can be made quickly and at moderate cost; the essential differences between desirable and undesirable petroleum products. These difficulties are especially great with respect to lubricating oils. At the present time this bureau is conducting a series of dynamometer tests at the San Francisco laboratories, in cooperation with the American Petroleum Institute, to determine, if possible, the relative merits of motor oils made from California crude which do and do not meet the acidity and demulsibility tests for Class "C" oils as given in Bureau of Mines Technical Paper 323. The oils tested are to be similar in all other respects.

As the entire question of desirability of products depends on the use to be made of them, a radical change in mechanical design of our automotive equipment, as for example the adoption of the oil engine in large numbers, would necessitate corresponding changes in specifications for petroleum products. The innovation of the electric starting mechanism has rendered a different grade of gasoline acceptable for passenger cars than might otherwise have been the case. This circumstance is illustrated by the objection raised during the war by the French representatives to gasoline with an initial boiling point of 140° F. The objection was on account of starting difficulty because the electric starter was not in such general use in France at that time as in the United States.

Correcting Evaporation Losses

A study of evaporation losses in the storage and transportation of petroleum and its more volatile derivatives by engineers of the bureau of Mines, demonstrated the enormous losses sustained in this way and suggested corrective measures which are in common use today throughout the industry. Were it possible to compute the yearly saving in gasoline, resulting from this piece of work, its value would probably be several times more than the cost of maintaining the entire Bureau of Mines. Interest in this subject has been greatly stimulated in the Mid-Continent fields by adoption of the gravity basis for the sale of crude. This method furnishes incentive for the operator to conserve, as far as possible, the gasoline content of the crude and penalizes the inefficient producer. On the other hand, the refining company gets what it pays for. The interest displayed in keeping manholes and gauge-holes closed on lease tanks and in avoiding the splashing of oil in the tanks being filled, as well as otherwise reducing evaporation losses when the Mid-Continent fields went on the gravity sale basis, was illuminating to say the least.

Even such a brief statement as this, of the Bureau's relation to the petroleum industry would be seriously incomplete without reference to the constructive work done in relation to the drilling and producing departments of the industry. Our engineers are constantly at work studying special problems of those fields where physical or economic conditions present special problems. The results of such studies may take the form of bulletins, field reports, notes to operators, or actual assistance in the execution of unusual pieces of work. Although it is usually possible to point to a direct monetary saving, thus effected, sufficient to defray many times the cost of the work, the most important result is the general improvement in operating methods which this sort of thing encourages. Briefly, the Department of the Interior has made, and is making, available to the industry, without charge, a corps of experienced engineers who are in a position to focus the results of their experience in many fields on the particular problems that may prove troublesome.

MR. W. C. HILL
Petroleum Economist, United States Bureau of Mines
Photo by Harris & Ewing

Government in the Oil Business

The passage by Congress of the Leasing Act of February 25, 1920, placed the Federal Government in the oil business as the largest owner of proven and prospective oil land in the world. In addition to the Government's financial interest, the Department of the Interior has to consider the broader aspects of constructive conservation, and its function as trustee for the Reclamation Service and the representative States which are parties at interest in the royalty derived from these properties. These duties are performed by the Interior Department very much in the same manner as a large oil company handles similar business. The General Land Office has full authority as to matters of title, issuance of leases and permits and may be compared to the legal department of an oil company. The Geological Survey performs important duties in the designation of proven and prospective oil land and, through its publications, encourages drilling in the areas which give the greatest promise and discourages wildcatting in less favorable areas, thus saving an immense amount of useless drilling. The Bureau of Mines is charged with the supervision of operations and is analogous to the operating department of a company. This work requires the undivided attention of a corps of engineers, gagers, and accountants, in order to insure proper drilling methods, prevent premature flooding of productive strata and other damage to the deposits, to see that the oil is fairly gaged and that proper accounting is made to the General Land Office, which, in addition to its other duties, acts as the financial agent for the Department in regard to these matters. The engineers engaged in this work are available to the industry for advice and assistance as far as practicable in line with their special duties of a supervisory nature, and, like those employed on the purely investigative work, are just as anxious to assist in saving a barrel of oil on privately-owned land as on Government-owned land.

It is not financially possible and probably never will be, for the Department to employ a sufficient number of engineers to meet all the calls for assistance that are received. This fact has certain obvious disadvantages, but, at the same time, one great advantage comes to mind: If a department of the Government were to develop a sufficiently large force to give detailed consideration to all phases of the petroleum industry, there might be grave danger of developing a sort of paternal despotism at the expense of the private initiative and resourcefulness which has always characterized the industry in normal times and, to a greater extent during a National emergency, as proven in the late war.

Core Drilling for Structure and for Oil

By Forest R. Rees

Core drilling has been used for over fifty years in mining regions all over the world in the search for coal, diamonds, gold, silver, iron, lead, zinc and other valuable minerals hidden in the rocks. Such minerals occur in the rocks under conditions which prevent a safe estimate of their presence, position, depth and thickness without the aid of a series of core-drill, prospect holes, from which are recovered true samples of the hidden treasures, that prove their exact position in the rocks. Such minerals usually occur in a kind of rock formation which is irregular in shape and cannot be surveyed and pictured by engineers without the aid of core-drill holes, therefore, the business of manufacturing core-drill machines suitable to meet the needs of mining engineers and mineral prospectors began its evolution. Today core-drill machines are being manufactured and used which will drill holes to depths of over 5,000 feet through the hardest kinds of rock known and the core recovered from such holes is over 95 per cent perfectly preserved, thus giving a mathematically correct measurement of depths and thicknesses of formations and perfect samples of their composition and texture.

Core drilling for subsurface data in the oil fields is the most scientific and practical improvement ever made on methods of searching for oil or of producing oil. The regularity of the rock formations of an oil country make core drilling much more valuable in the search for oil than it is in the search for other kinds of minerals, as discussed above, and when this fact is recognized by oil companies who are not yet familiar with core drilling, they will insist on core-drill methods of obtaining geological data and core-drill testing for oil.

Oil geologists have known of the final authority which is vested in the core-drill for obtaining reliable data for structural surveying, but they have not urged the use of core-drills in the oil industry until within recent years, because the industry had not made complete use of structural data which could be obtained by plane table surveys of the rocks which outcrop at the surface.

Within the past five years practically all regions which could be satisfactorily surveyed at the surface, have been covered by geologists and practically all future geological surveying must be done by the aid of core-drills which penetrate a sufficient depth to furnish shallow subsurface data for mapping the structure.

Core-drills for shallow subsurface use have been employed in Oklahoma for over two years by the most progressive and successful oil companies, with most satisfactory results.

Large core-drills for drilling oil wells are being used in Mexico and California, and will be used extensively in the Mid-Continent fields within the coming two years.

"A few of the many Moore Derricks erected by the Gulf Production Co. at Caddo Lake, La."

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At Caddo Lake, La., a few years back there was hardly a Moore derrick to be seen. A year ago there were a few, and today there are a great many. Eventually you may scan the lake in vain for a wood derrick, remembering that not long ago there was no other kind.

The choice of a steel derrick is easy—the Moore derrick is invariably the choice of the large majority of operators using steel derricks. The Moore derrick, years ago, passed the experimental stage, and the evidence of over 20,000 Moore derricks in successful use should mean more to you than all the reasons we could give you for its superiority.

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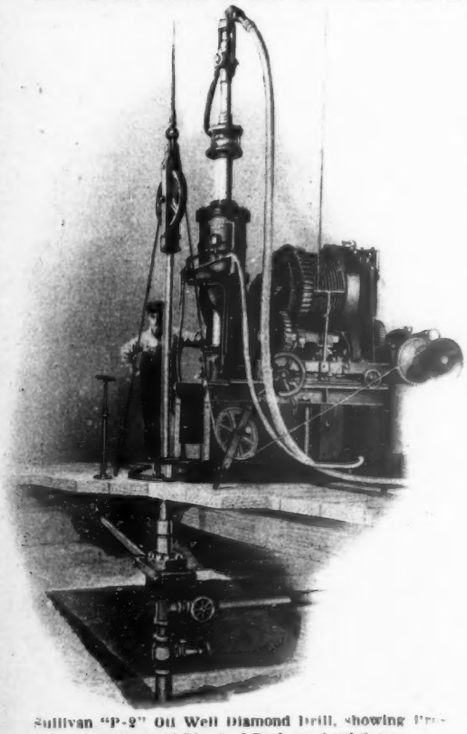
Diamond Drilling for Oil has "arrived"


Sullivan "P-2" Oil Well Diamond Drill, showing Pressure Control Rig, Rod Brake and Oil Saver

WHEN the Panuco-Boston Company brought in a well with a Sullivan Diamond Drill in the Tampico field in December, 1921, diamond drilling for oil became a proven success—no longer an experiment. Today Sullivan Diamond Drills are in successful oil field use in Mexico, Texas, Oklahoma, California, Colorado, Montana, Santo Domingo, South America, etc.

In all formations and in all varieties of oil field drilling the diamond drill has proved its value.

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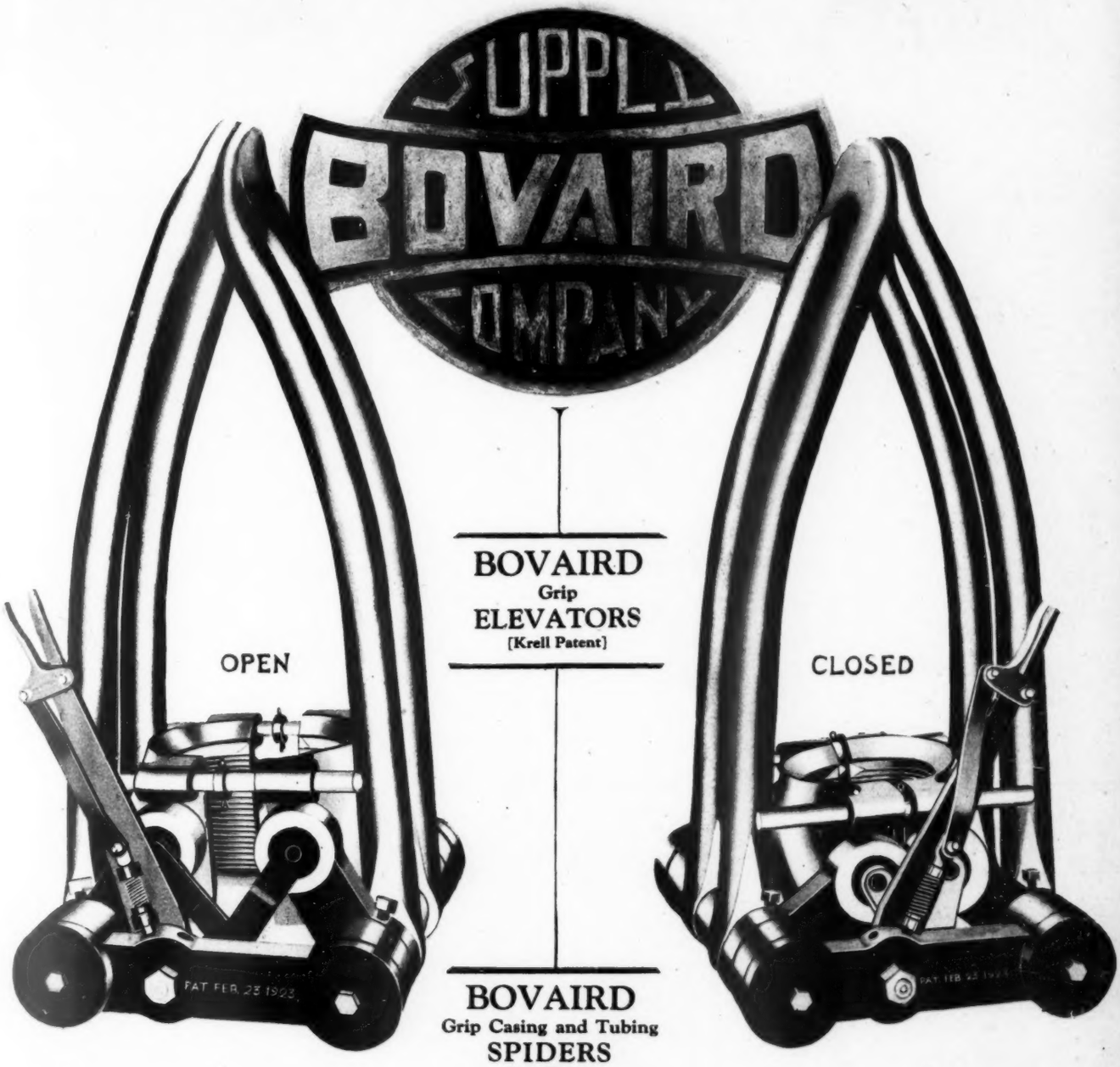

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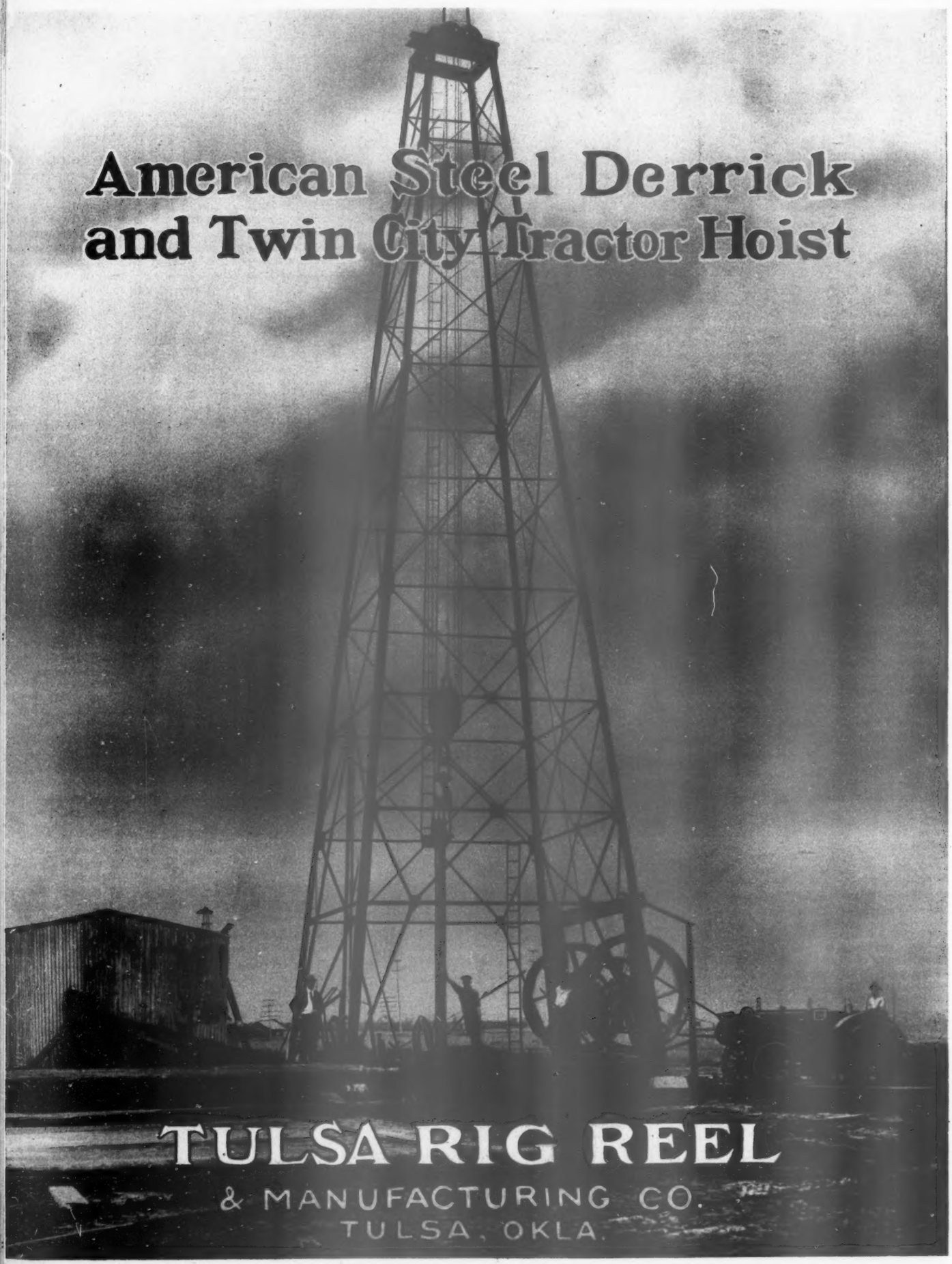
American Steel Derrick
and Twin City Tractor Hoist
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The Survey's Value to the Industry

Highly Trained Specialists Study and Solve Oil Men's Problems, With No Hope of Large Financial Reward.

By Charles E. Kern
Washington, D. C.

The view point of the United States Geological Survey on the subject of petroleum is one that should be known to every producer and refiner in the oil industry. The Survey has every possible interest of the producer, marketer and refiner except the hope of large financial reward.

The personnel of the Geological Survey is made up of men of splendid education and experience, many of whom have devoted the larger part of their lives to discovery and perfection of knowledge relating to oil geology. George Otis Smith, for so many years at the head of that bureau, and now temporarily doing difficult work in connection with the coal industry, and Dr. David White, eminent as a geologist, stand prominently among the scientists who have made valuable contributions to the petroleum industry.

The Survey's petroleum statistics, resulting in monthly and annual statements of production, consumption, imports and exports, have been familiar to the public for very many years and are accepted the world over for their comprehensiveness and accuracy. This work is very familiar to most oil men, since it is their cooperation in supplying the data on which the statistics are based that makes it an accurate, authoritative source of fact.

The classification of oil lands by the Land Classification Branch of the Survey tells the oil man where government-owned lands are located, and whether or not his well is on a known geological structure, as well as the limits of that structure.

Foreign mineral resources are kept in touch with by a division of the Survey insofar as such contact is possible through consular reports and other government sources, together with published information in leading foreign and domestic periodicals.

The Survey's Field Work

The geology of oil and gas fields is perhaps one of the most important of all the activities of the Bureau. Oil and gas resources of the United States are studied, individual fields are mapped, and unflagging search is maintained for facts and principles that will not only permit the fullest and most economic development of known fields but will also assist to the greatest possible extent in the discovery and exploitation of unknown fields. In this work a number of geological specialists on oil and gas are kept constantly employed, and in addition the services of many specialists in other lines — stratigraphers, structural geologists, paleontologists, physicists, and chemists — are called into use as occasion arises. Oil geology is such a great subject, and its possible applications are so many that only by the combined efforts of many experts, each a specialist in his own limited field, can results of the greatest value be achieved.

Thus during the past two years the distribution and continuity of certain oil-yielding formations of the Rocky Mountains have been under investigation, and in order to do the work most effectively it was not assigned to an oil geologist but to Willis T. Lee, known internationally as an authority on the origin, age, and correlation of formations.

Microscopic Studies of Fossils

Somewhat similar is the recent work of G. H. Girty and P. V Roundy, paleontologists, in Arkansas, Oklahoma, and Texas. The one is an expert on fossils, most of which can be studied without the assistance of a microscope. The other specializes on tiny forms, many of which are practically invisible to the unaided eye, but which, under his powerful microscopes, show characteristics that make their identification certain. These specialists are well known to the oil men of the Mid-Continent fields, who have asked the Survey to identify fossils in their drill cuttings. During the past year they made elaborate collections from many localities which will furnish the type specimens that will let them determine, with even greater accuracy than before, the formation to which any particular fossil belongs. In the course of this field work they studied briefly an area near the Criner Hills of Oklahoma, and their findings will necessitate important modification of the pre-existing conception of the stratigraphic and structural relations of formations in that territory.

Studying Sands Scientifically

The work of A. F. Melcher on porosity, texture, uniformity, productivity, etc., of oil sands is another example of the work being done by the oil and gas section of the Geological Survey, which utilizes the talents and training of a specialist in a field other than oil geology, for Mr. Melcher is a physicist. He has progressed far in his studies of the relations that must hold between porosity and texture of the oil sand, and its rate of yield, life of wells, suitability of sand for certain extraction methods, total oil content of sands, and many other problems, the solution of which may change loss to profit in the development of many districts. The work promises to be of particular value in connection with estimates of oil and gas production. At present the oil operator must depend on estimates based on past performances either of the property, the future output of which is being estimated, or of properties that are similar in essential respects. This last procedure is almost equivalent to saying that two tanks which seem to be of the same size, judging solely from their outside measurements, will hold the same amount of oil, when inspection of their interiors would have shown that one tank was partly full of sand. An estimate based solely on comparison must be a guess, whereas one based on known thicknesses, textures, and porosities of oil sands in a pool whose limits have been established, should tell much more accurately than can be determined by present methods just what the total oil content of the pool is. Such an estimate will serve not only for present purposes under production methods now in vogue but will be equally valuable in the future when methods shall have been evolved to recover at least a part of the 75 to 90 per cent of oil that present operating methods leave in the sand.

The Study of Drill Cuttings

Another type of work in which the Geological Survey is one of the pioneers, is the microscopic study of drill cuttings to determine the exact nature and distinguishing characteristics of the formations drilled through. An example of this type of work is the report on "the stratigraphy of the El Dorado Oil Field Arkansas, as determined by drill cuttings" by James Gilluly and K. C

DR. DAVID WHITE

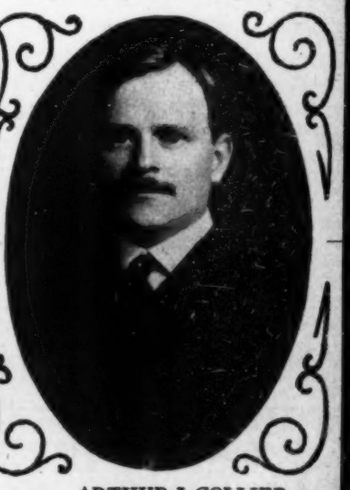
Former Chief Geologist, now Senior Geologist, Geological Survey, making a special study of the source of materials from which petroleum is derived.

JOHN D. NORTHRUP

In charge of the oil land classification work of the Geological Survey. This work serves as an important part of the oil land leasing act.

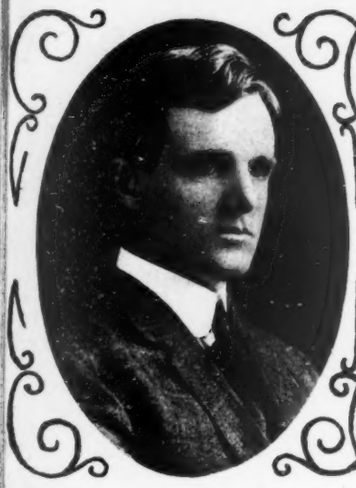
K. C. HEALD

In charge of the Section of Oil Geology of the Geological Survey. He has had wide experience in the Mid-Continent and Rocky Mountain fields.



ARTHUR J. COLLIER

Now making a geological study of the Sweetgrass Arch, in northwestern Montana. He is widely known among oil operators in the Rocky Mountain Region.



GEORGE B. RICHARDSON

eologist and oil and gas statistician, who repares the reports of oil and gas produc- on of the United States for the Geological urvey.

FRANK REEVES

Mr. Reeves has just completed a report on an area of very peculiar faulted structures south of the Bear Paw Mountains, Montana, a promising area.

W. TAYLOR THORN, Jr.

Mr. Thorn has made broad structural studies in the northern Great Plains of Montana, Wyoming and the Dakotas, of great value.

PAUL V. ROUNDY

Studying the micro faunas which oil companies have of recent times been using extensively in determining the identity of oil sands.

leald. It will be recalled that it was . C. Heald who foresaw and voiced he belief of the Geological Survey in he discovery of important oil fields n southern Arkansas. His statement, ade in August, 1920, that "The evi- ence available indicates that south- estern Arkansas is one of the more romising of the undeveloped re- ions" was received with considerable kepticism, but the El Dorado, mackover, and minor fields have urnished abundant proof of its oundness.

Geologic Map of Oklahoma

A project now under way which is eceiving the enthusiastic support of klahoma oil men is the preparation f a geologic map of the State. The eologists of Oklahoma have long felt he need for such a map, to be used n conjunction with the map pub- shed about a year ago by the Geo- gical Survey, which shows the oil nd gas fields of Oklahoma, and it as through their initiative that the ork was undertaken by the Survey. Much of the data for this map will e from the maps prepared by the geologists of various oil companies. Other data have been supplied by the Oklahoma Geological Survey, while the United States Geological Survey is using all its available maps, both published and unpublished. The compilation is in charge of H. D. Miser, of the Geological Survey, whose work in southwestern Oklahoma and adjacent areas in Arkansas is known to most students of Mid-Continent geology.

A study of more than ordinary interest is being made of the Pershing oil and gas field of Osage County, by W. W. Rubey. Necessary field work for this project has been completed and the first progress report was published a few weeks ago. The Pershing Field was selected because development work was practically complete, and well records, production statistics, etc., were available. The selection proved a good one, for Mr. Rubey has already demonstrated certain relations between structure in the surface beds and that of the oil sands, relations of areas that yield large wells to structure and to the character of the oil-yielding beds, and other conditions that should be considered when developing an oil pool in this region, and has pointed out a host of problems that must be solved if the oil fields of north-central Oklahoma are to be developed with the greatest degree of success.

Dr. White's New Work

Results of the greatest importance to oil geology were practically insured a few months ago when David White, who for the past ten years has been Chief Geologist of the United States Geological Survey relinquished that position so that he might devote his entire time to research. He is devoting himself particularly to study of the fossil plant organisms of microscopic size which he finds exist in great numbers in oil shales and other possible mother beds of oil. A contribution on this subject "Mother plants of oil in Devonian black shales," by David White and T. Stadnichenko, which was published in Economic Geology, is an important addition to the all too meagre literature on this subject. Some operators and geologists may fail to appreciate the importance of work of this nature, agreeing with the statement made by one well-known geologist that they "should not be so interested in the question of how or why the oil originated, but rather where it originated." Just how it will be possible to know where it originated without first understanding how and why, is left to the imagination.

Besides the work on special projects such as these listed, the geologists of the Oil and Gas Section of the Geological Survey must every year consider and reply to hundreds of inquiries from all parts of the world. Also special investigations must be made, maps, prepared, and information assembled in response to requests from Congress and from other Departments of the Government. Rarely does a week fail to bring some unexpected demand on the geologists' time, and nice judgment is required to decide to what purpose that time shall be devoted in order that it may be of greatest service to the employers of the geologists — the people of the United States.

S. W. KEW

eological Survey representative in the oil fields of Southern California.

W. H. BRADLEY

Making special study of oil shales in the Rocky Mountain Region.

J. D. SEARS

Now in Baxter Basin, Wyoming, making detailed structural studies.

A. F. MELCHER

Expert on porosity, texture, uniformity, productivity, etc., of oil sands.

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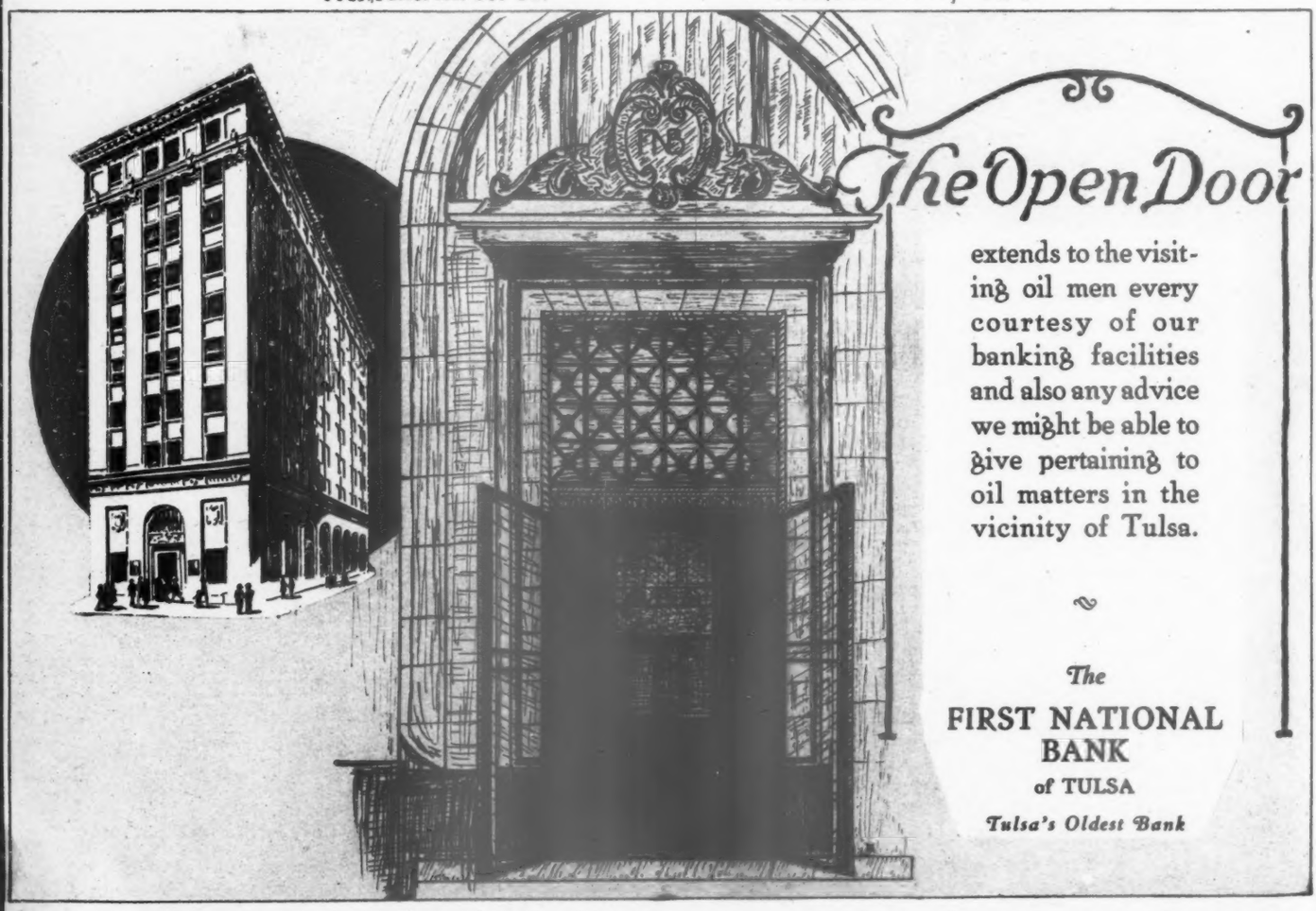
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extends to the visiting oil men every courtesy of our banking facilities and also any advice we might be able to give pertaining to oil matters in the vicinity of Tulsa.
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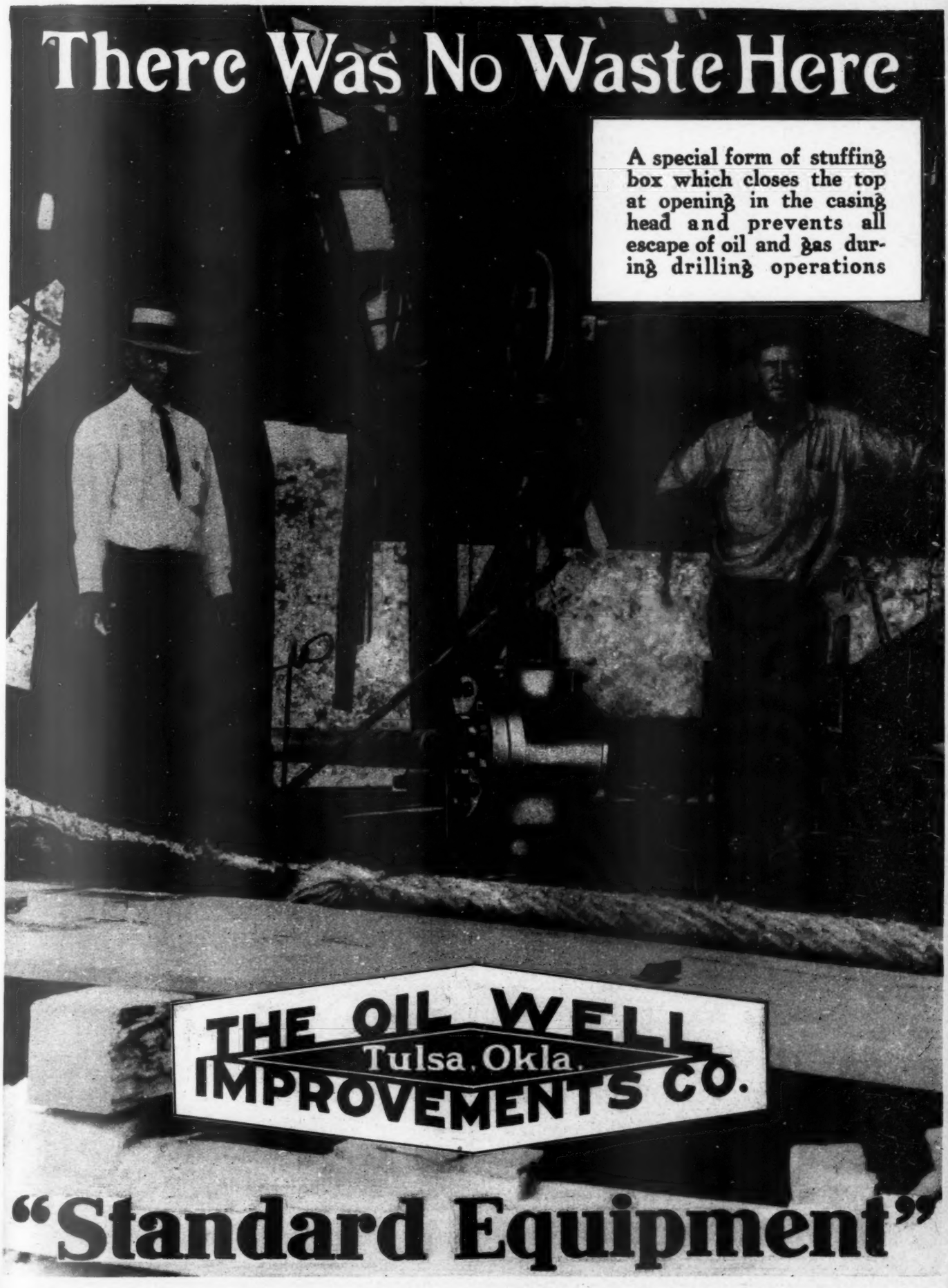
A special form of stuffing box which closes the top at opening in the casing head and prevents all escape of oil and gas during drilling operations



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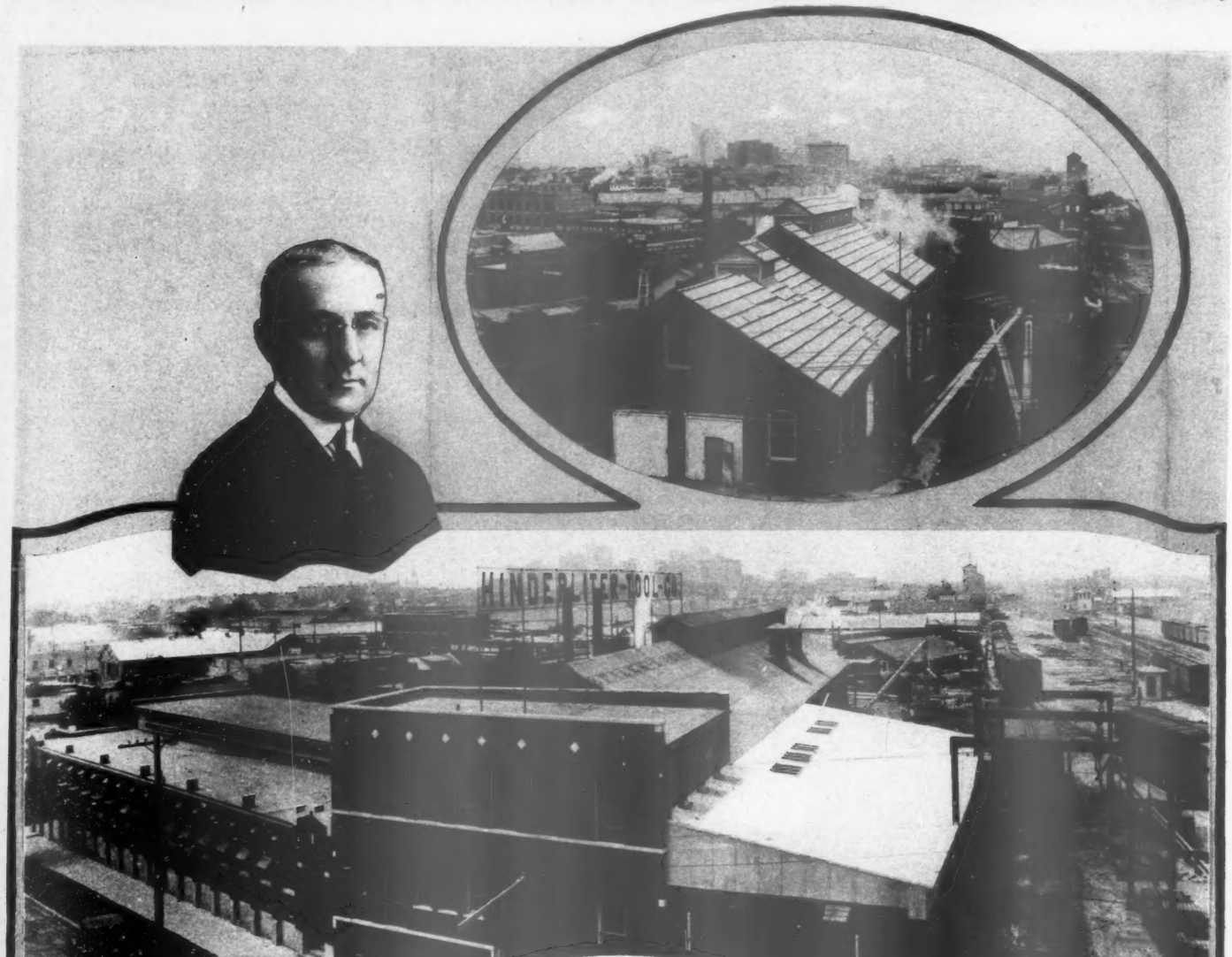

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$300,000,000 Worth of Oil Supplies

Annual Consumption by the Producing Branch of the Industry. Economic Necessity for Standardization.

By J. Edgar Pew

Vice-President of the Sun Oil Co., and Chairman of the Committee on Standardization, American Petroleum Institute

Oil well supplies form a most important part of the oil industry, whether in production, transportation, or marketing.

According to estimates received from reliable sources, over $300,000,000 is paid annually by the oil companies for supplies to the supply and pipe manufacturing companies. Of this amount, 35 to 40 per cent, is for tubular goods, 20 per cent, for machinery, which would include boilers, engines, pumps, compressors, powers, etc., and the balance, 40 to 45 per cent, general merchandise, which would include the multitude of other supplies, such as Manila and wire rope, packers, sucker rods, all kinds of fittings, tools, etc.

It is the judgment of the writer that the above estimate is much too low and that under present price conditions, and considering the amount of drilling done in 1922 and 1923, the development and production departments alone of the industry will, together, consume annually over $300,000,000 worth of oil supplies.

It should be noted that the estimated annual expenditure above referred to does not include the cost of derricks, wood and steel tanks, lumber and innumerable other articles of equipment and supplies not handled by the regular supply houses, although these items are essentially and properly a part of the cost of the production and saving of oil. Furthermore, the $300,000,000 estimate excludes the vast additional expenditures for pipe lines, storage and refining and marketing equipment which obviously should be added. The writer has been unable to obtain any estimate of the expenditures in these departments.

Four of the largest companies, in their operations in the Mid-Continent Field alone, have an average annual expenditure of $8,250,000 for field supplies.

Few Large Companies

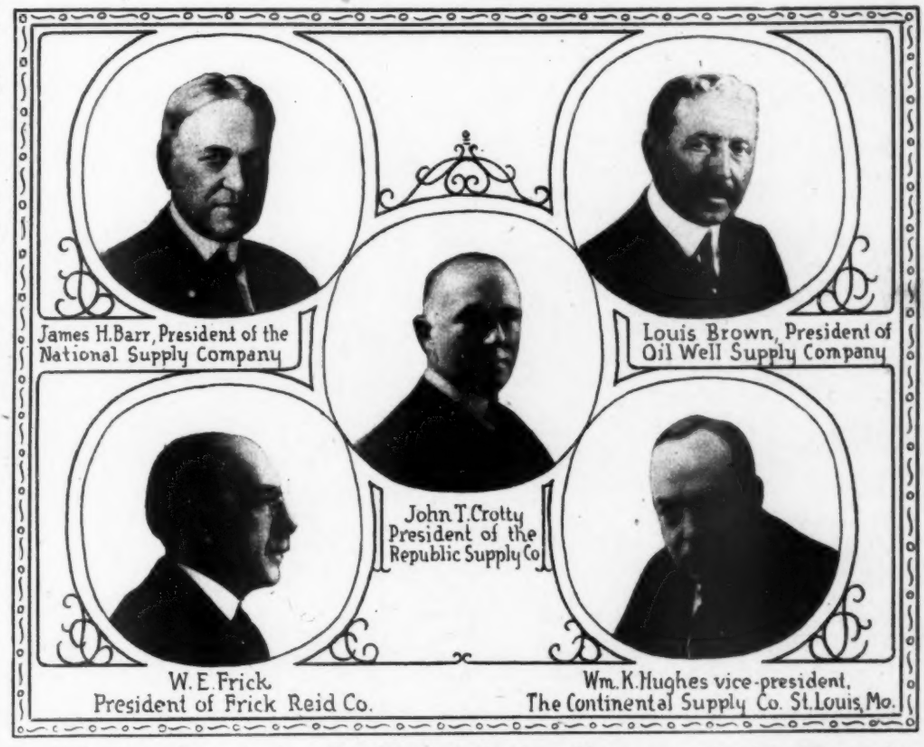
Oil well supplies are manufactured and sold by a relatively few large companies; although there are hundreds of smaller dealers whose business in the aggregate is very large. A history of the development of oil well supplies would be a history of the oil industry.

The larger supply companies usually have their general headquarters in the East, but have large branch stores and manufacturing plants in the various "oil centers," and scores of smaller stores scattered throughout the producing fields. It is estimated that there are over 500 of these distributing "centers."

Many producers owe their success in the oil business to the faith of the supply companies in their integrity and in their ability to make good. In the operation and management of the supply business there is now, and generally has been, employed a fine lot of men who are zealous for the interests of their employers, and at the same time are most accommodating and helpful to the producers—both large and small.

In the development of oil well supplies, most of the improvements have been worked out and developed by the supply men. The result has been that the operator has been able to meet the new conditions continually arising in his business by the use of new tools, or new equipment, made by the supply houses. Frequently the suggestions come from the producer who had neither the technical training or the machinery with which to develop his ideas.

While this development has been necessary and useful, out of it has grown a condition which is becoming a great burden to the business: a multiplicity of tools, of machinery and of other supplies, for doing the same work; but made differently and frequently used differently. A single company, operating in the same field, may be doing the same work with from two to six different makes of pumps, or of engines, and the same condition would apply to practically every other kind of material it used. This would look like poor management, but it has been the result of necessity, and from inability to obtain the particular class or kind of equipment, or its parts, from one store, thereby making it necessary to buy something else with which to do the same work. Results are that the warehouse stocks of the supply companies and of any of the large producing companies operating in any field are not only much greater than they should be, but also much of the cost of the producer's operations are from the failure of his employes to use the equipment in its proper place at the proper time, and their lack of familiarity in the use of all the different kinds of material and tools given him.


James H. Barr, President of the National Supply Company
Louis Brown, President of Oil Well Supply Company
John T. Crotty President of the Republic Supply Co.
W. E. Frick. President of Frick Reid Co.
Wm. K. Hughes vice-president, The Continental Supply Co. St. Louis, Mo.

10,940 Items in Stock

A few statistics will better illustrate conditions: An average of the number of different items of supplies carried by each of five of the larger supply companies in one of their district stores is 10,940. This does not include any duplication of sizes. Nipples, globe valves, tees, ells, plugs, etc., are also treated as one item.

An average of items of stocks of material carried by four large producing companies in their warehouses is over 6,000 items.

It is estimated that from 25 to 40 per cent of these items of material and supplies could be eliminated, both in the warehouses of the supply companies and in those of the producers, if standardization of material and tools could be accomplished.

This alone, if nothing else were accomplished, would save much money to the producer in keeping down his investment costs. The producer also pays for the investment tied up in the supply company stores. But the greatest saving to the oil industry is in the elimination of the use of so many different kinds of material and of so many different kinds of tools.

Standardization Misunderstood

At the Third Annual Convention of the American Petroleum Institute, standardization of material and equipment was the keynote.

"Standardization" is a much misunderstood term with many of the oil men. It is not an attempt to regulate him in what he shall do, how he shall work, or what material and what tools he shall do his work with. The "old timer" is rather "sot" in his ways, and any attempt to do any of these things to him would be time wasted. On the other hand, if he can be shown that his costs can be greatly reduced, the oil operator is

very much inclined to do anything that will put him on better terms with his banker.

Standardization means:

(a) The development of tools and of equipment of the most approved kinds, and to their highest degree.

(b) That such material and such tools will always be available for use and at all of the supply stores in all the fields.

(c) That the parts for such equipment as is being used will always be available.

(d) That equipment will be interchangeable.

(e) That the employes will be more proficient in the use of these materials and tools.

(f) That mistakes in ordering and in the use of material can be more easily avoided.

(g) That all costs of operation would be greatly reduced both of investment and expense.

I recently heard a large supply manufacturer admit, owing to certain changes in gauges of parts of drilling equipment which his company makes on a large scale, and without any claim on his part that the changes were made in the way of betterments, that these parts would fit neither the shafts of machines of other makes. nor the shafts his company made a year or more ago.

Who pays the cost of such business as this but the producer?

This is but one of a thousand practices the oil industry permits and pays for.

A Good Investment

It would pay for the oil industry to support the American Petroleum Institute in employing an efficient and practical corps of engineers who would be engaged permanently in studying the needs of the business, and who would specify for all manufacturers a set of standards for material and tools to be made for use by the industry, furnishing gauges for the making of like material and tools to all manufacturers, and who would check the material and tools, and insist on the use of these standards. In the writer's judgment, millions of dollars annually could in this manner alone be saved to the industry.

The work of the American Petroleum Institute on pipe standardization has probably progressed further than on tools and other material. The committee has consulted with the industry in all the fields of the country, with the manufacturers and with the technical men. It is in practical unanimity and should have its report ready to submit to the American Petroleum Institute this fall. The committee has considered the many new problems of deeper drilling, and in the report will recommend new sizes of pipe to meet these new conditions, which will also meet the needs of drilling to any present depths. If these new sizes are not adopted now, these or other sizes not now in use must be accepted later, as much of the deeper drilling at this time has to have special sizes of pipe, at greatly increased costs, because they are special; and with the additional disadvantage that these special sizes are not available to the average producer, nor are they to be obtained by anyone without delays, and, when they are obtained, special fittings and special tools must be made to be used with them; all this tends to get further away from standards, and adds to investments both in material and in tools. Should the Pipe Committee's report not be adopted, as to changed sizes, it is hoped, at least, that for the sizes now used a standard of thread, of taper and of outside diameters for all pipe of the same size may be determined upon, and that it will be insisted upon by the Institute that gauges for these will be the same for all the mills, and made and checked by the same gauge maker.

This will accomplish much toward standardization, will enable the operator to avoid many mistakes and losses, and will materially reduce his investments in both material and tools.

Standardization is one of the foremost problems in the oil industry today, and only when it has been thoroughly accomplished as to all kinds of material, of tools and of machinery, will the industry have done its honest duty to itself and to the public at large, as it is the latter who must pay, in the final analysis, for costs of producing and handling oil. It is our duty to see that these costs are intelligently and honestly reduced by use of the best methods.

Is the "Oil Industry" willing to cast aside all prejudice and cooperate in this work, and is it ready to do it now?

View of Factory

Section of Factory Interior

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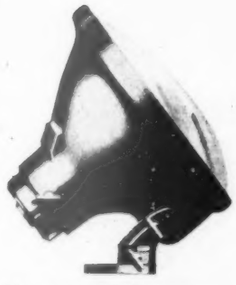

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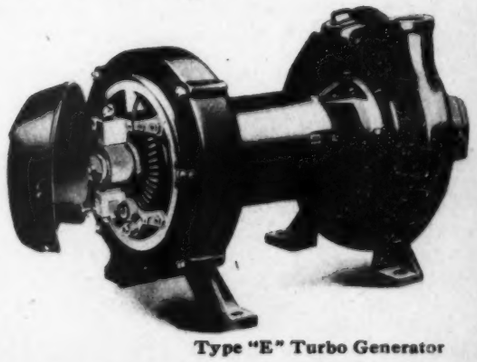

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Refiner Has Kept Ahead of Demand

In the Mid-Continent An Enormous Business Has Been Established to Help Meet the Requirements of the American Public.

By George N. Moore.
President, Western Petroleum Refiners Association

Practically speaking, the development of the refining industry of the Mid-Continent field has been co-incident with the growth of the automobile. During the first few years of the Kansas field the automobile was being "tried out." Then came the rapid increase of motor vehicles and with it the remarkable expansion of refining in what has now come to be known the world over as the Mid-Continent oil field.

It is probably safe to say Kansas was the cradle of the skimming plant. Up to that time even small refineries were equipped to make all petroleum products. But with the demand for gasoline came the opportunity of making quick, easy money by simply skimming from crude the light products. For this purpose almost any kind of an equipment would suffice. The result was cheaply constructed plants began springing up all over the middle-west field. In many instances the first stills were nothing more than old boilers with the flues knocked out. It was a harvest time for promoters. Very few of the earlier refineries of the Mid-Continent are today owned and operated by the original builders, and most of them have been entirely rebuilt.

Generally speaking refinery construction in this field has, from the beginning, been a few laps ahead of demand. Excessive refining capacity has been the greatest obstacle the industry has had to combat. It has never overcome it, and is suffering, at this time, its greatest depression by reason of it. It has always been too easy to raise money to embark in petroleum manufacturing. The industry and all concerned would be better off if not a single additional refinery was built for at least the next ten years.

In the Early Days

The first refinery in the Kansas-Oklahoma district was erected by the Standard Oil Co. at Neodesha, Kan., about 1901. Today it is one of the finest plants in the entire country, with a capacity of about 20,000 barrels per day. Previously refineries had been started at Kansas City and Paola, but never completed. The first independent refinery in the field was erected by C. D. Webster at Humboldt, Kan., in 1904 or 1905. Almost the first thing that happened after it was in operation was a price war. Mr. Webster stated in the newspapers that the Standard was attempting to crowd him out of business. Others said Webster started to market his products by advertising cheaper goods. That has been largely the history of the Mid-Continent field down to today. The Humboldt refinery is still running, the property of the Miller Petroleum Co. The next two plants were built the following year, the Great Western, at Erie, which has been shut down for several years, and the plant operated by the Oklahoma Producers and Refiners at Muskogee.

By 1908 there were 28 refineries in the Mid-Continent field. Of these only two were Standard, that company having in the mean time built a plant at Kansas City. The capacity of the 28 plants was 31,225 barrels a day, or less than a single independent plant today, the Cosden refinery at Tulsa, having a capacity of 40,000 barrels a day. The capacity of the independent refineries in the Mid-Continent field in 1908 was 8,225 barrels, the Standard having a combined still-charging to the amount of 23,000 barrels. The total crude oil production of the field that year was 48,274,782 barrels. The number of wells drilled in Kansas and Oklahoma during the year was 3,494.

Influence of Cushing

Between 1908 and 1912 there was scarcely any refinery construction in this field. And yet in 1912 there was a depression as a result of too much gasoline. That year refinery building was started in real earnest and has continued to this time. That was the beginning of the Cushing pool in Oklahoma. The high quality of Cushing oil and the large quantity of it completely revised the refining industry of the country. It became necessary for refiners to get Cushing crude in order to compete. Many plants were built in the Cushing district. The result was that by the spring of 1915 kerosene sold at refineries at 1 cent a gallon and gasoline as low as 5c a gallon. Fuel oil was contracted at 25 cents a barrel. This was the result of crude on the open market at 26 cents a barrel. Strange as it may seem many of the great successes of the Mid-Continent field were laid at that time.

Today there are 150 refineries in Kansas and Oklahoma, over 50 per cent of which were shut down when this was written owing to overproduction of gasoline. But in normal times most of these operate. They represent an enormous investment, the total of which, including production, pipe lines, refineries, tank cars, and marketing facilities, is almost staggering. But since the early days the Mid-Continent refining field has extended to include Missouri, the southwestern corner of Illinois, Arkansas and northern Texas. This territory, excluding north Texas, has 177 refineries, and with north Texas, approximately 265 refineries. Generally speaking, these plants represent an investment of about $250,000,000, but if their production, pipe lines, tank cars and marketing facilities are all taken into account, it is probable the figures would amount to nearly a billion dollars. For illustration, one company listed at $1,000,000 places its entire holdings at $9,000,000.

An Industrial Miracle

When it is taken into consideration the bulk of the enormous sum of money above mentioned has been invested since 1912, or in eleven years, the development of the industry in the Mid-Continent field has been little short of an industrial miracle, especially in view of the fact that during most of this period the world has either been passing through the most gigantic war of all time, or trying to get over it. Within this time the oil industry has witnessed its greatest heights of glory and delved into its deepest depths of gloom. But in it all it has always been plunging ahead.

Kansas, the cradle of the Mid-Continent field, has 40 refineries with a daily capacity of about 115,000 barrels and an investment of all the way from $40,000,000 to $100,000,000, depending upon how much of the holdings are included.

Oklahoma has 110 refineries with a capacity of over 300,000 barrels a day and an investment of from $100,000,000 up to possibly five or six hundred million. It is almost impossible to give the figures at all accurately. At any rate they are almost unbelievable. Had anyone predicted their proportions a dozen years ago he would have been hustled off to an asylum before he could harm innocent people.

Investment Limit Not Reached

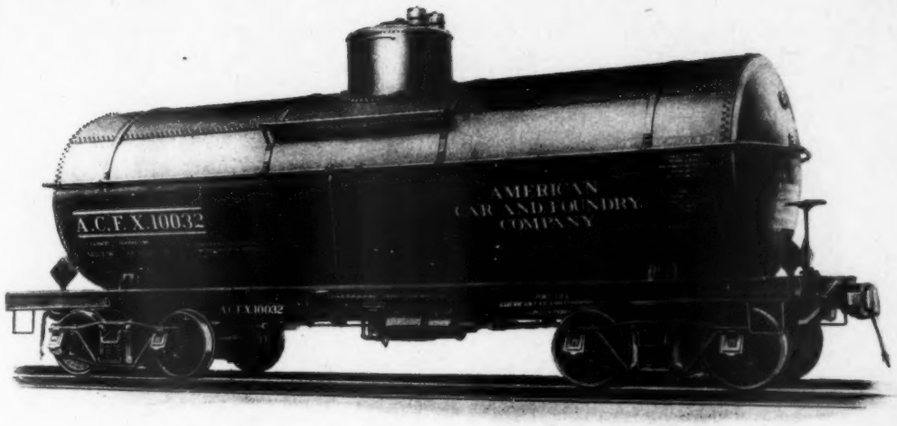
Nor has the limit of investment been reached. Some of the largest and most costly improvements have been made in the past year or two. The installation of cracking processes is rapidly augmenting the plant investment. It is hard to tell what the end will be. So much depends upon the future of the automobile. If some other kind of power, such as electricity, or something not yet discovered, should be substituted for gasoline, of course, that would be another story. It is possible. But so far there seems to be nothing to stay continued advancement and the outlook is bright for one of the greatest periods in the business.

When the first eight or ten refineries were built the percentage of gasoline recovered was very small, less than 15 per cent. Then in 1912 the Standard Oil Co. installed pressure or cracking stills in its plants. That was the beginning of a new era. Today the plant is not operating, speaking almost with precision, that cannot recover approximately 30 per cent of gasoline. Some plants are claiming as high as 48 per cent on monthly averages through skimming plants, while those with cracking units are recovering 50 per cent and upwards, in some cases, of 60 per cent.

The over-production of gasoline was not a matter so much of over-supply of crude as it was failure to adjust to modern methods of distillation. The total amount of gasoline this year from casinghead plants and by cracking will more than amount to the total output of all kinds of gasoline in 1912 in this country. This means that by scientific methods the manufacturing branch of the industry has lengthened out the supply of crude oil several hundred per cent in the last decade. Had it not been for this it would not have been possible to meet the demands of the automobile for motor fuel.

And as the industry has found ways to meet the demands in the past, so will it continue in the future to meet the requirements of the people. Gradually greater recovery from crude will be secured through still better methods of refining, and likely through better quality of oil by reason of deeper drilling.

The Mid-Continent refining fraternity feels confident of its ability to go on meeting every demand made upon it. The only thing it is anxious about is the coming of the demand as the industry expands. Mid-Continent refineries have the capacity of taking care of more than twice the demand today.



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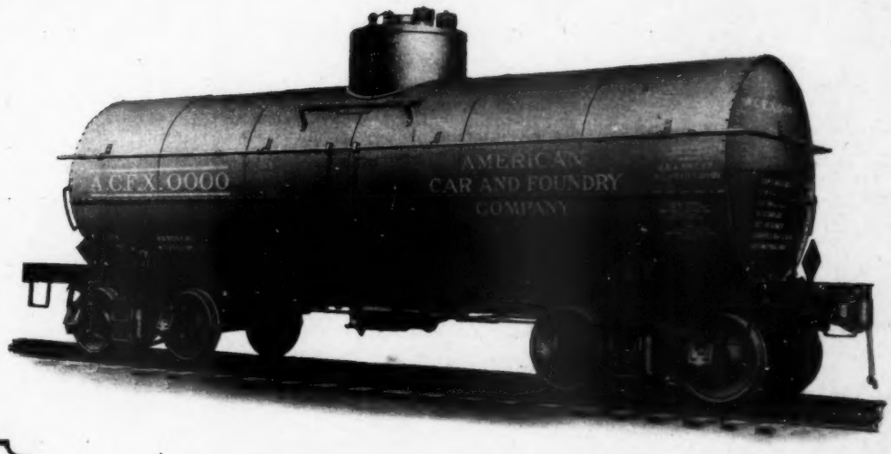

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Booth G-10

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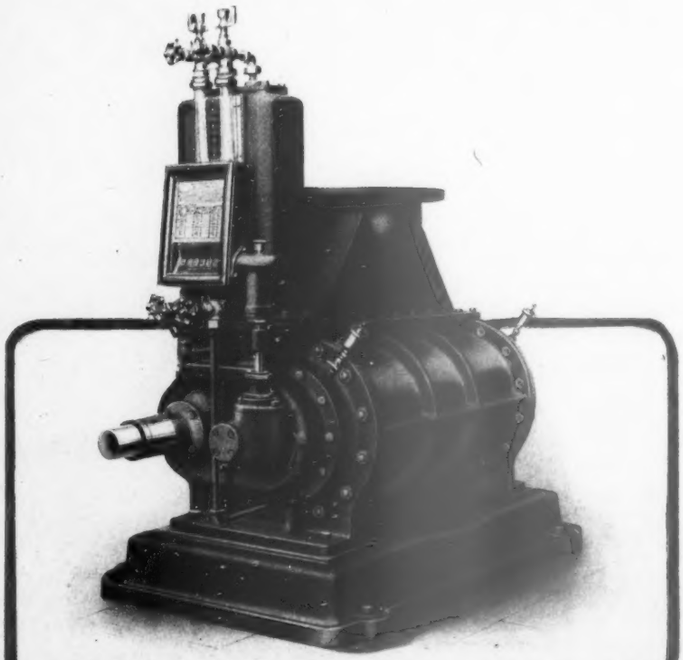

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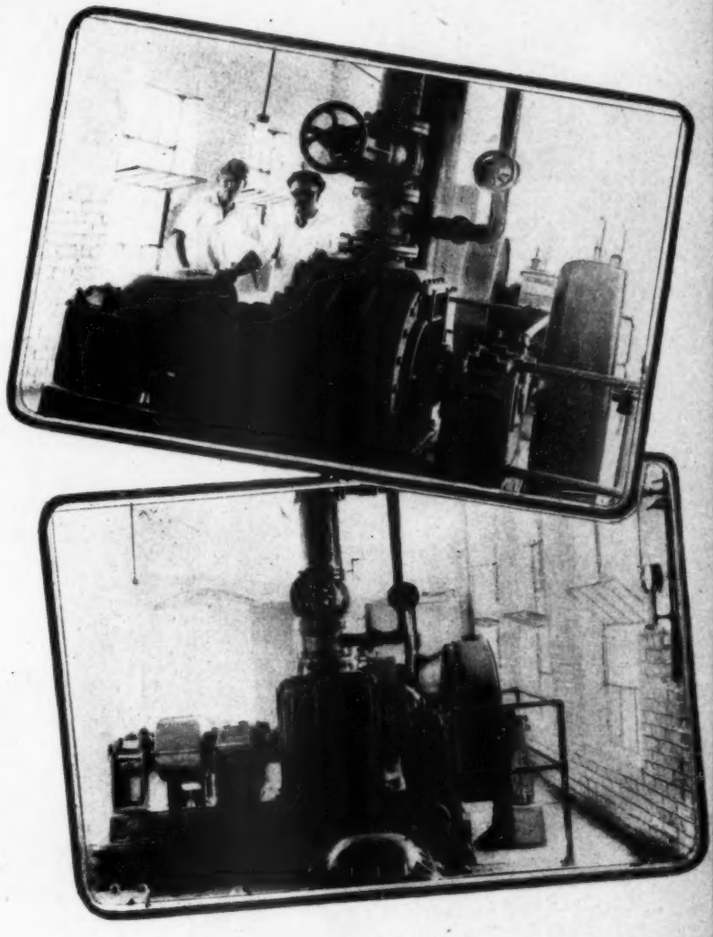
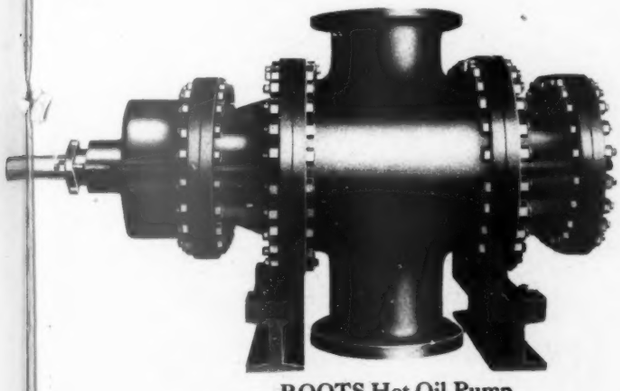
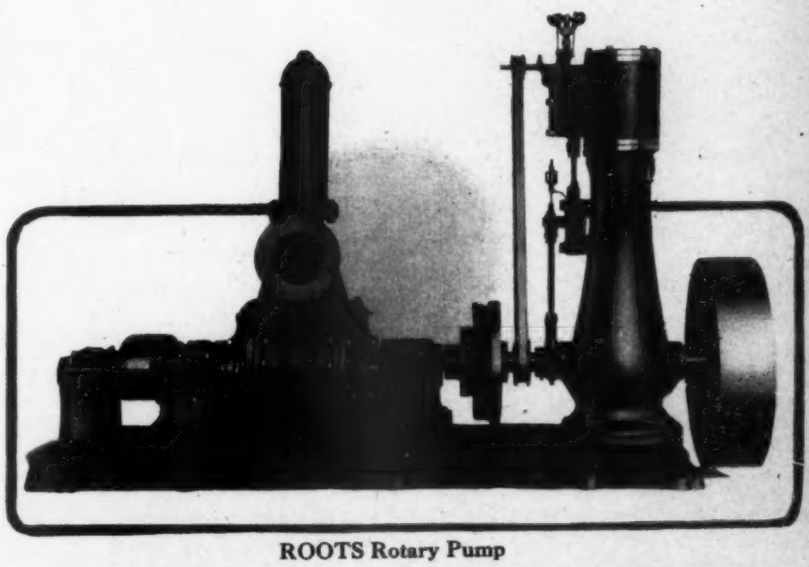




ROOTS Hot Oil Pump



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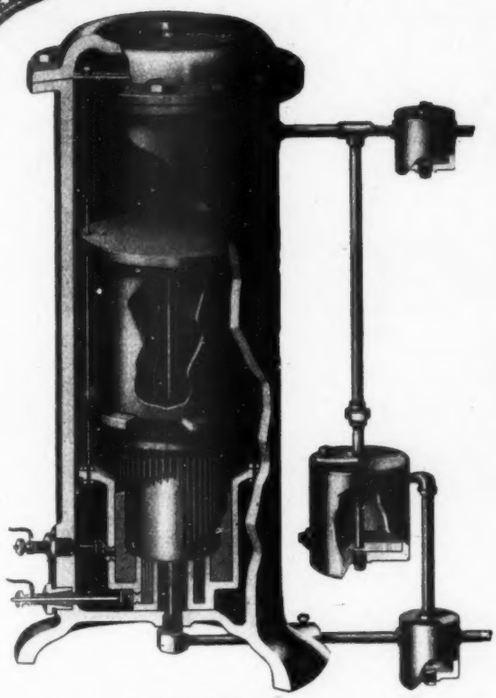

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A broken away section which shows the float with its graduated nickel contact wires that are progressively withdrawn from the mercury as the float rises. At the right are the moisture traps and the pressure shunt. To the left are the electrical connections leading to the recorder.

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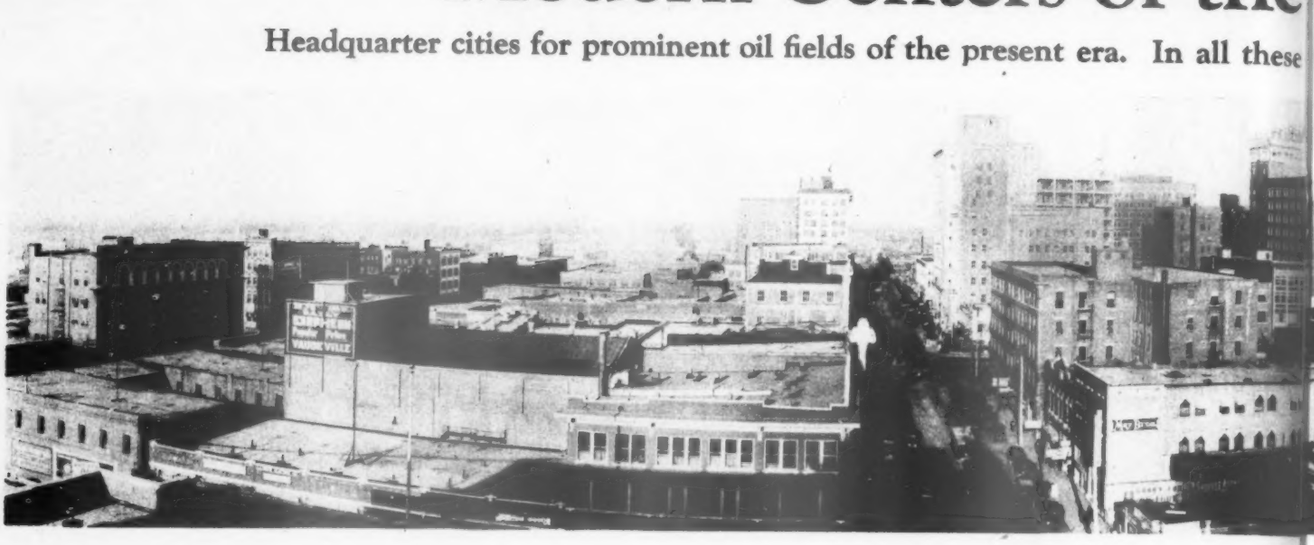
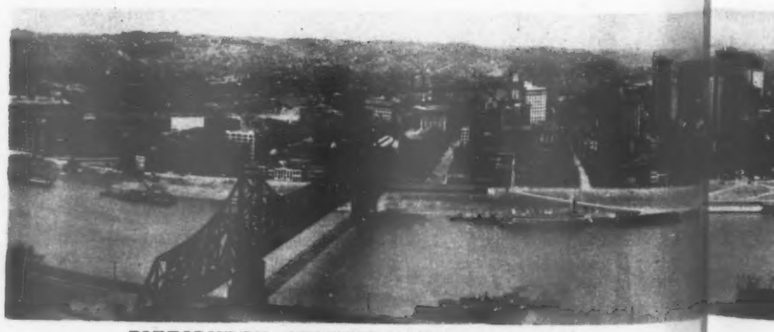


EL DORADO, ARKANSAS, a quiet little place before the oil man put Southern Arkansas on the industrial map, and now a thriving and rapidly-growing city, boasting of its conveniences and advantages as a place of residence. It is the most important oil town in Arkansas.
Photo by International Newsreel.

DALLAS, TEXAS, the gateway of the East Central Texas fields, and the headquarters for some of the big operating companies of the Mid-Continent. The highest structure shown in the picture is the Magnolia Petroleum Building.

CASPER, the oil metropolis of Wyoming, converted by petroleum from a little cow town into a beautiful and prosperous city, which is yet on the ascendant in population and wealth.

SHREVEPORT, LOUISIANA, headquarters for oil companies and individuals operating in North Louisiana and South Arkansas fields. An old city which has grown greatly and prosperously in recent years with the development of the oil and gas resources of two states.



PITTSBURGH, PENNSYLVANIA, is the center of the Eastern oil fields. Big corporations and individual producers operating from the Allegheny field

Petroleum Industry

cities petroleum plays a prominent part. In some it is the principal industry

TULSA, OKLAHOMA, the oil metropolis of the world. The largest strictly oil city on earth. From it is directed field activities as far north as Montana and as far south as Southern Arkansas. It was "a place in the road" a score of years ago. Now it is a rapidly growing city of 110,000 people and is well known wherever oil is produced in the world.

WICHITA FALLS, TEXAS, the remarkable recent growth of which may be credited entirely to oil. It is the headquarters city for the North Texas fields and from it is being directed the exploration of the Panhandle of Texas, which is looked upon as the depositary of much undiscovered oil wealth.

HOUSTON, TEXAS, headquarters for oil operators in the Gulf Coast Fields of Texas and Louisiana. As an oil-refining and shipping center it has long held a prominent place, and is growing in importance with the recent pipe line extensions from the more northern fields to the Gulf.

GREAT FALLS, MONTANA, the center of Northern Montana's widespread field exploration and development. A progressive town which hopes to rival other oil region headquarters cities in importance.

to Kentucky and even in the Mid-Continent fields have their headquarters here. It is also the center of important pipe line and natural gas activities.

LOS ANGELES, CALIFORNIA, the center of all Californian oil-field activities and the headquarters for many oil companies and individual producers. One of the most important oil refining and shipping centers in the world. Petroleum plays a great part in the industrial life of this Pacific metropolis.

Distribution Is A Great Problem

Excessive Investment In Buildings and Service by Retailers Deplored As Uneconomic. Reform Is Necessary.

By David W. Moffitt
Vice-President of Cosden & Co.

One of the greatest problems confronting our people is the problem of distribution. There is being offered to us on every hand service such as our forebears never dreamed of. These services, accepted as a favor today, are demanded as a right tomorrow, and with this constant expansion of service we see a constantly rising tide of living costs that threatens to overwhelm us.

The lady who buys a yard of gingham and a spool of thread and orders it delivered, lays upon the general scheme of distribution a burden for which she must pay, and for which all her sisters and brothers must pay in turn. We are, perhaps unconsciously, withdrawing from the ranks of productive industry a horde of people who are in fact public butlers, valets, waiters, pages, performing for the public at large every species of service which the fertile brain of man has been able to conjure up as desirable since the day he found he held the power to cajole or hire or force others to do for him those services he disliked to perform for himself.

Whether the trend of events will, in the working out of the law of evolution, develop a tribe of people with but a torso capable of receiving and digesting the food which others prepare and deliver to it, may be best left for William Jennings Bryan and his antagonists and protagonists to debate.

A Genie with a Magic Wand

The petroleum industry, far from being in the ruck of this orgy of service development, has a fair claim, I am sure, to the very front rank among all industries in this regard. I cannot call to mind at this time any other industry which has had such marvelous growth and development as this, except those which owe their growth and development to petroleum. It has been a genie, touching with a magic wand the corpse of other industries and transforming and energizing them into newness of life, opening to them fields of endeavor that eluded even the imagination before. It has proven a fountain of youth, the elixir of life to this old world and many of its age-old civilizations, until today, in spite of our quarrels and disagreements, we find the world on the threshold of the greatest onward rush in material progress it has ever known. And among those things rated as causes, this industry stands first.

It is little wonder, then, that into this industry have crowded a vast number of active, pushing, energetic, capable men, and also a corresponding number of those less capable. The development of this great industry, now ranking second among all our manufacturing and distributing industries, lies easily within the memory of any man of middle age. Its beginnings had close relation to what we are pleased to call the simple life. The few supplies required to meet the needs of the community were carried by the corner grocery, the hardware store and occasionally the drug store. Purchases were carried home in a tin can and kept in strict seclusion, a caution emphasized occasionally by an explosion that took its toll of man or woman or child.

The Beginning of the New Era

Then came the internal combustion engine, creature of petroleum, a creation that never would have been without it, destined to revolutionize transportation by land and sea and air, to make mockeries of battleships and fortifications but a child's playhouse, and the great race between production and consumption was on. In both these great realms of endeavor the element of uncertainty lends zest and enthusiasm to those who have sporting inclinations. Whether the drilling campaign will yield producers or dry holes has no more of the element of uncertainty than has the activities of those who are giving thought and effort to the development of other means of applying this great source of power, so easily controlled and applied, to other enterprises and industries in spheres now undeveloped and unknown.

Development of Service

And while this race between production and consumption was being carried on, the great army engaged in taking the products from the factory and delivering them to the consumer, has not been idle. This department has developed from the delivery in a tin can at the corner grocery to delivery into the gasoline tank of a limousine, upholstered as luxuriously as a king's throne a century ago, from a service station which is a work of art and representing an expenditure, in many cases, more than sufficient to outfit a Columbus on his voyage of discovery, with liveried servants to test your air, examine your radiator, fill your crank case, hand the baby a stick of candy and the lady in the party a fragrant rose or carnation. A colored orchestra at the right and a free picture show on your left while you wait is just a slightly delayed improvement now being prepared. It is an attractive calling and the manufacturers of pumps and station equipment are prepared to prove to any inquiring soul, that fortune beams on all and singular who engage in this seductive line of joyful business.

DAVID W MOFFITT

The usual size of the city squares is 300 by 300 feet. Complaints are beginning to be heard in some quarters that there are not sufficient corners in the cities as now laid out to furnish locations for service stations and a movement is expected soon to open streets where there are now alleys in order that service station locations may keep pace with the needs of promoters in this line. We are rapidly approaching that stage in the marketing end of the petroleum industry where 50 per cent of the people will be consumers and the other 50 per cent vendors in charge of service stations.

Somebody Pays.

We might be able to find nothing but satisfaction and great joy in contemplating this development in the industry, if it were not for the fact that side by side with it, we find a constantly increasing margin of cost we are being asked to pay. For years, in a great territory comprising eleven states, the margin of profit allowed by the marketing agency which fixed the price in that territory to those who operated service stations, was one cent per gallon. Today we find many places where this margin is five cents per gallon, and we are told this margin is necessary if any profit is to be made, and we begin to realize that my Lord and Lady of the limousine are paying for the roses and carnations, the candy and free air, the free service, given lavishly from one hand and charged for lavishly by the other. We begin to realize that five stations, handling three hundred gallons of gasoline each daily, cannot be operated on the same margin of profit as one station handling 1,500 gallons of gasoline. We begin to realize that a station costing $75,000 cannot operate, and return a profit on the investment, on the same margin of profit as a station costing $3,500. Some of us begin to realize we have made a parlor out of a livery stable and are charging for it; we are digging ditches in silk sox and patent leather shoes and asking the boss, the dear public, to furnish the sox and shoes; we are skinning pigs with diamond studded butcher knives and adding the cost of the diamonds to the tenderloins. We have gone insane on the question of invested captital in an industry where it is utterly unnecessary and where neither volume or character of business handled justifies the expenditure.

The public gasps in astonishment and admiration when each new gasoline art gallery opens for business with a cabaret entertainment and favors for everyone, and we watch eagerly for the progressive individual who will give diamond stick pins, gold headed canes and pearl handled parasols with each purchase of five gallons of gasoline, but we eternally forget that we pay for what we get; that in the days to come we will scratch the bottom of our jeans pants pockets to furnish other souvenirs for other openings which we will not have the pleasure of attending.

We need many things in the nature or reforms in the petroleum industry but we need nothing more than a prompt return to economy, efficiency and old-fashioned horse sense in the retail end of the business, and failing to secure these the financial undertakers and grave diggers will enjoy a busy season.

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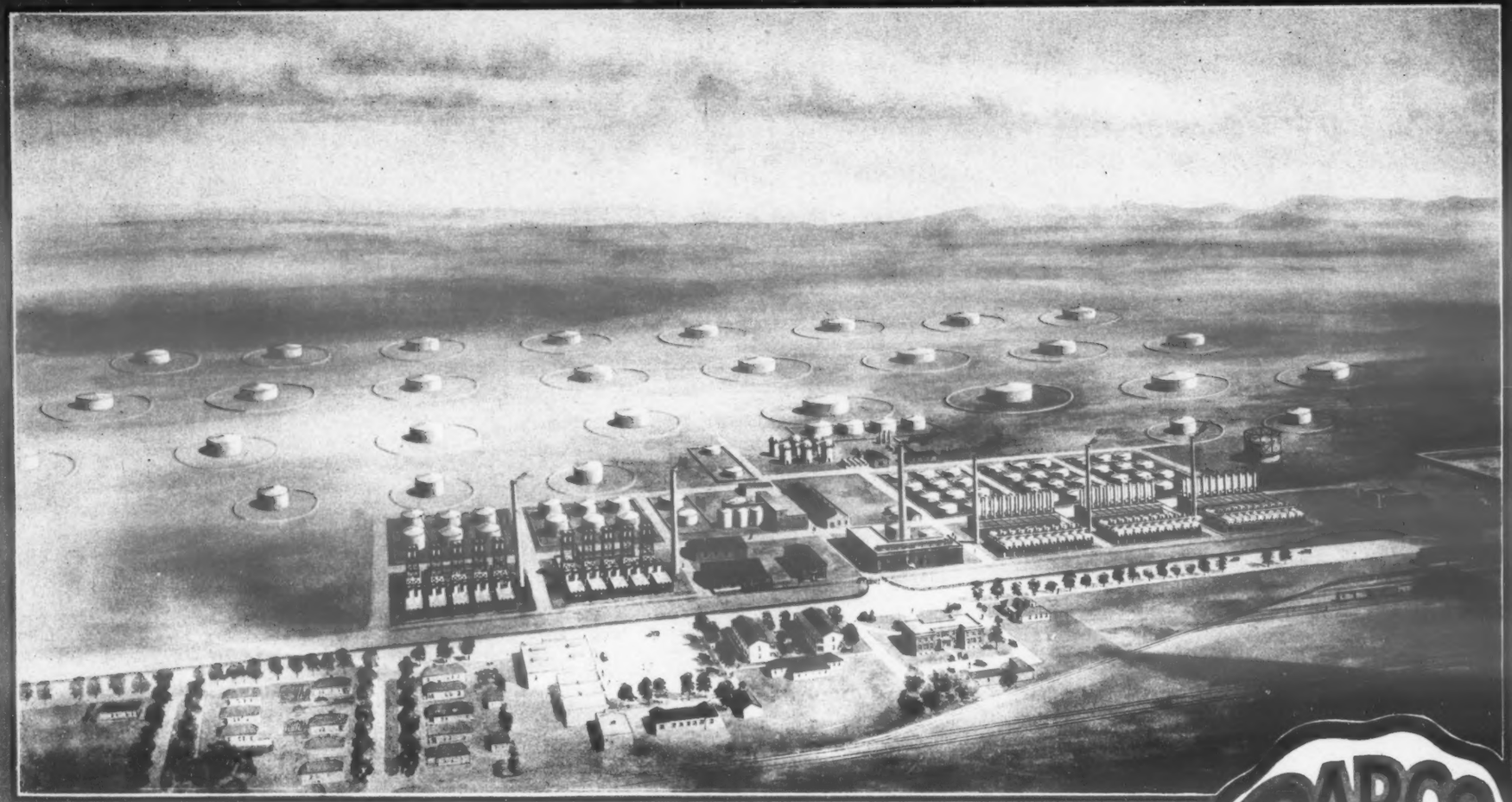

SINCE the completion, in September, of two final links in "P&R" pipe line systems, our 3 refineries at Parco, Wyo., West Tulsa, and Blackwell have been operating at full capacity—10,000 bbls., 10,000 bbls., and 3,000 bbls. respectively—on crude produced *exclusively* by "P&R" wells and piped *exclusively* in "P&R" pipe lines.

A 30 mile pipe line from the Wewoka Field connecting with our line from the Lyons Pool to West Tulsa was completed about September 1st, and the final section of our 163-mile Salt Creek-Parco line in Wyoming was completed on September 10th. These additions increase the total mileage of "P & R" lines to 464

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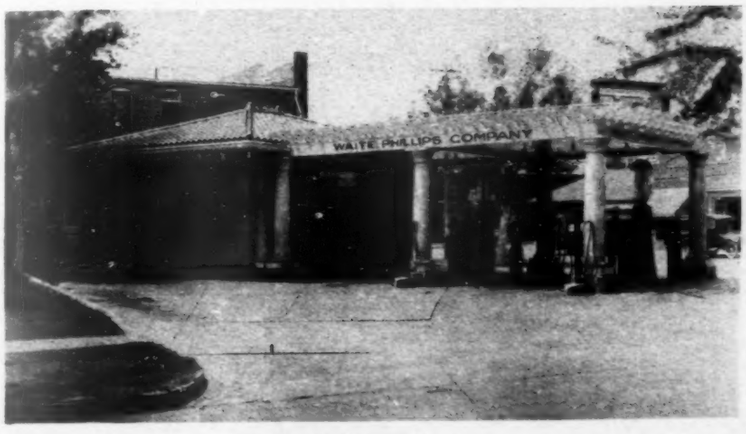

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The Evolution of Natural Gasoline

Youngest Branch of the Industry Has Fought Hard for the High Place It Has Won and Its Future Is Assured.

By A. V. Bourque
Secretary of the Association of Natural Gasoline Manufacturers

Natural gasoline is the result of necessity. Away back in the early 80's the presence of gasoline in natural gas was discovered, but at that time, and for some years later, it had no function in the commercial life of this country. Bothering the operators of natural gas transportation lines to the extent that drips had to be installed to collect the condensation, it was allowed to flow on the ground, there being no demand for gasoline at the time. It was not until 1903 that this drip gasoline, now known as natural gasoline, was found to have commercial value, and it was then collected and marketed. The method of marketing was exceedingly crude, the gasoline being collected in wooden barrels and sold in those receptacles in the neighborhood of Parkersburg, W. Va. This was the birth of an industry which is not only a very part of the motor-fuel structure of today, but a necessary part as well.

It was still in the early 90's that the first plant for the manufacture of natural gasoline was built. William Richards is given credit for the idea. His first plant was constructed at Mayburg, Pa. Following the construction of this plant, which was of the compression type, all later plants were built along the same lines and, although applications for U. S. Letters Patent were filed as early as 1905, it was not until 1913 that a plant designed to operate under the absorption method was constructed. It was located at Hastings, W. Va., and probably was the first plant of its kind of any consequence, although experiments had been conducted along that line for some years prior to that date.

Growth Demanded Recognition

It is only a few short years—twelve, to be exact—since natural gasoline as a commercial product became sufficiently important to merit recognition by the Bureau of Mines in its petroleum statistical compilation. Prior to that year it had been gaining headway both in production and as a necessary adjunct to motor fuel, until in 1911 its growth had reached a total of 7,425,839 gallons with a cash value of $531,704. From that year on the growth of the industry was phenomenal, as the following table will show:

Year	No. of plants	Total production gals.	Total value	Average per gal.
1911	——	7,425,839	$ 531,704	.072
1912	——	12,081,179	1,157,476	.096
1913	——	24,060,817	2,458,443	.103
1914	——	42,652,632	3,105,909	.073
1915	——	65,364,684	5,150,823	.078
1916	596	103,492,689	14,331,148	.138
1917	886	217,884,104	40,188,956	.184
1918	1004	282,535,550	50,363,535	.178
1919	1191	351,535,026	64,196,763	.183
1920	1184	384,743,922	71,534,118	.187
1921	1161	473,658,500	65,717,900	.14
Total		1,965,434,942	$318,736,775	.162

While the figures for 1922 have not yet been compiled it is estimated that at least 638,750,000 gallons were manufactured in that year, an average of 1,750,000 gallons daily, bringing the grand total from 1911 to the end of 1922 up to 2,604,184,942 gallons. To the value of the product, $318,736,775 from 1911 to 1921, must be added $89,425,000, the estimated value of the 1922 output, making a total of $409,060,775 in the past twelve years. From figures compiled recently it is estimated that the daily production is now well over 2,000,000 gallons in this country, the growth of the industry in California and Wyoming being particularly rapid at this time.

The value of the product, which averaged 16.2 cents from 1911 to 1921, was estimated at 14 cents in 1922, but indications point to a greatly reduced value per gallon this year.

Today the natural gasoline industry is furnishing a little more than 10 per cent of the motor fuel of this country.

The following tables show the growth of the natural gasoline industry in its various branches:

Growth of the Natural Gasoline Industry in the United States

	Total gasoline produced in U. S., mill. gals.	Natural gasoline produced in U. S., mill. gallons.	Per cent of total gasoline	Natural gas treated, Mill. M. cu. ft.	Average yield M. gallons.
1916	2059	103	5.01	209	0.50
1917	2851	218	7.15	429	0.51
1918	3570	283	7.92	449	0.63
1919	3958	352	8.90	480	0.74
1920	4883	385	7.89	496	0.78
1921	5154	474	9.18	469	1.00

Output of Natural Gasoline, 1916-1921, by Methods of Production

	By compression—and vacuum—		—By absorption—	
	Million gals. produced	Per cent of total	Million gals. produced	Per cent of total
1916	85	82	19	18
1917	169	78	49	22
1918	220	78	63	22
1919	261	74	90	26
1920	281	73	104	27
1921	355	75	118	25

*1922 figures not available.

Absorption Leads in Favor

For many years it was thought that "rich" gas, i. e., gas with a large gasoline content, could not be manufactured by the absorption process, but the past two years have seen that belief controverted to such an extent that practically every new plant, especially those in the Mid-Continent and California fields, are either of the absorption or combination absorption-compression type. It was learned that gas with a high gasoline content would make a more stable product, while yielding practically the same amount of production, and many of the largest compressor-type plants in the Mid-Continent field have been converted to the absorption type since 1922. The absorption type has not only demonstrated its value but it has come to stay, and it is very likely that the future will see only that type of plants constructed.

While Pennsylvania and West Virginia must be given credit for founding the industry, the richness and yield of the gas in the Mid-Continent field attracted the operators as early as 1907, the year the first plant was built in Oklahoma. With the development of the big producing fields of Oklahoma, that State soon took the lead not only in the number of plants but in output as well, until it was soon leading the entire country. The past two years saw an exceptional growth of the natural gasoline industry in North Texas until that State seriously threatens the supremacy of Oklahoma as the greatest natural gasoline producing district in this country. Last year the industry got a great impetus in California and there are now approximately 100 plants making nearly three-fourths of a million gallons daily in that state alone. Today there are approximately 1,200 plants in this country with a total production exceeding 2,000,000 gallons daily. The total investment in this branch of the industry is nearly $200,000,000.

Natural gasoline, in its raw state, is extremely volatile and, except in a few instances, is not a commercial product. It must be blended before it becomes a suitable motor fuel. Manufacturers turned to naphtha as a blending material, and for some years the industry enjoyed exceptional prosperity, and grew by leaps and bounds, the number of plants increasing from 596 with a production of 103 million gallons in 1916, to 1,184 plants in 1921 with an output of nearly 474 million gallons.

Kerosene Blends a Failure

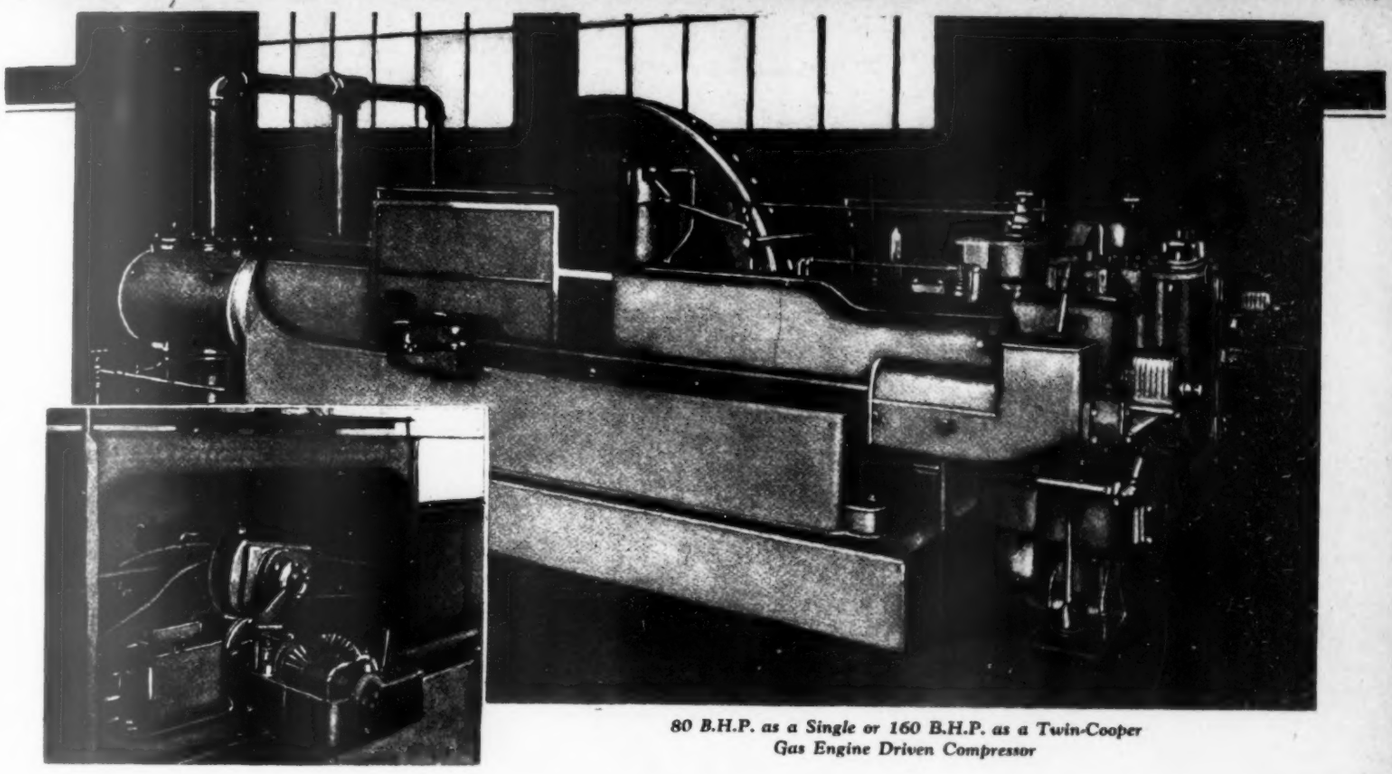
It was in the winter of 1921-22 that natural gasoline suffered its first real reverse. Prior to that time the Standard Oil Company had sought to make what was known as a kerosene blend, a blending of natural gasoline with kerosene instead of naphtha, as heretofore. Realizing its mistake the Standard failed to renew its big contracts and the industry, having built to the utmost was left with a lot of natural gasoline on hand without a market. As a result the industry became demoralized. It was during this period that the Association of Natural Gasoline Manufacturers was formed. One of its first official actions was the issuing of specifications for both natural gasoline and motor natural gasoline which, being universally adopted soon stabilized the industry with an attendant wave of prosperity, which lasted until the upheaval in the entire gasoline industry a few months ago.

Makes Ideal Motor Fuel

The discovery that a certain amount of natural gasoline (from 5 to 15 per cent) added to straight run gasoline made the ideal motor fuel. straight-run refiners have been the natural gasoline manufacturers' best customers. In fact, during the years 1921-22 more refiners used natural gasoline in blending than during any previous 5-year period. The past two years have demonstrated conclusively that where natural gasoline is used the refiner is able to cut for end-point only and build up the gravity by the use of natural gasoline.

The refiner has learned that the principal advantage to be gained by the use of natural gasoline is the raising of gravity and the lowering of initial boiling points, whereas he formerly used the valuable high gravity straight-run for this purpose. Then, too, natural gasoline is used to "pep up" straight run which has been in storage for some time and which has lost some of its volatile properties.

The manufacturer of motor natural gasoline also learned a lesson from kerosene blends and today is manufacturing a good commercial product from a combination of natural gasoline and a good-grade naphtha. While the blenders are in the minority among natural gasoline manufacturers at the present time, a number of them have a well-established demand from the trade. Indications point to a resumption of blending on even a larger scale the coming winter.



80 B.H.P. as a Single or 160 B.H.P. as a Twin-Cooper Gas Engine Driven Compressor

Cooper Engines Going Into Gasoline Plants Where Utmost Reliability Is Demanded

ASIDE from the fuel economy and ease of operation of the Cooper Four-Cycle Gas Engine Driven Compressors, there is still another important quality which has made them the choice for a number of this year's natural gasoline projects.

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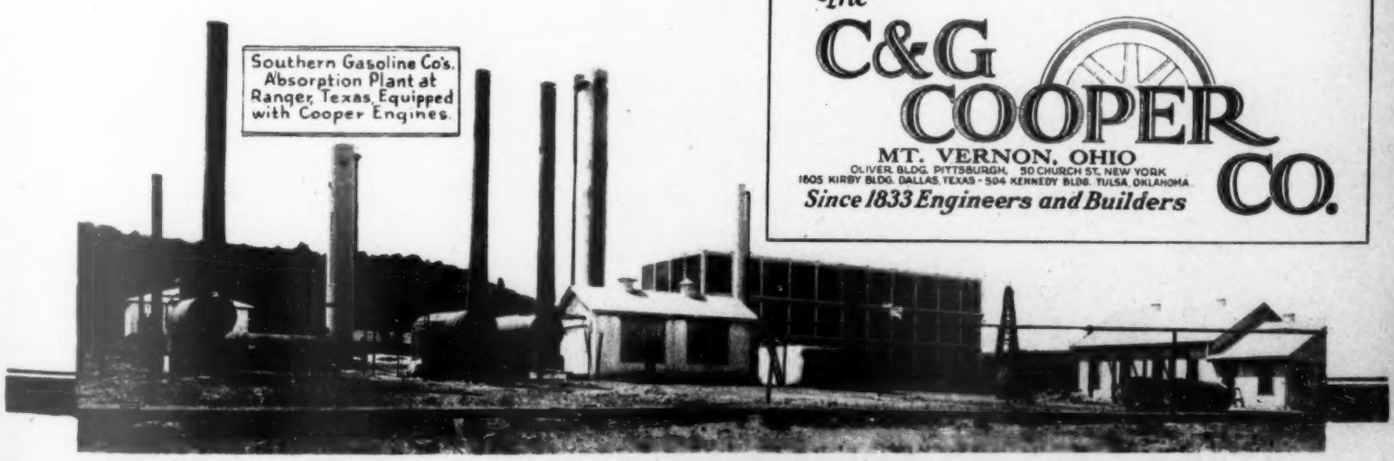
Such examples of continuous operation have built up a general feeling of confidence in Cooper Gas Engines for their super-reliability—the one quality most needed in a gasoline station if it is to pay dividends.



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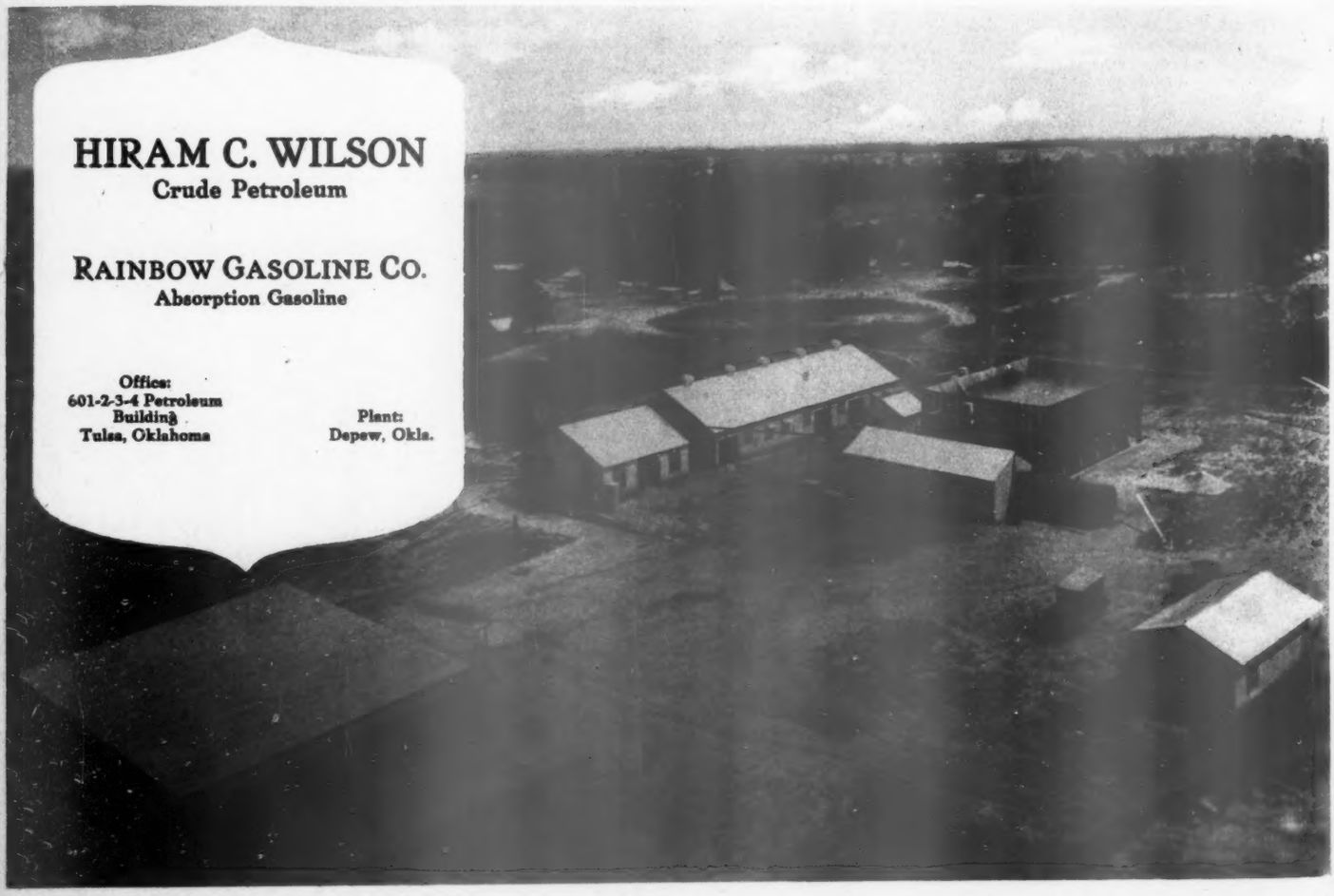
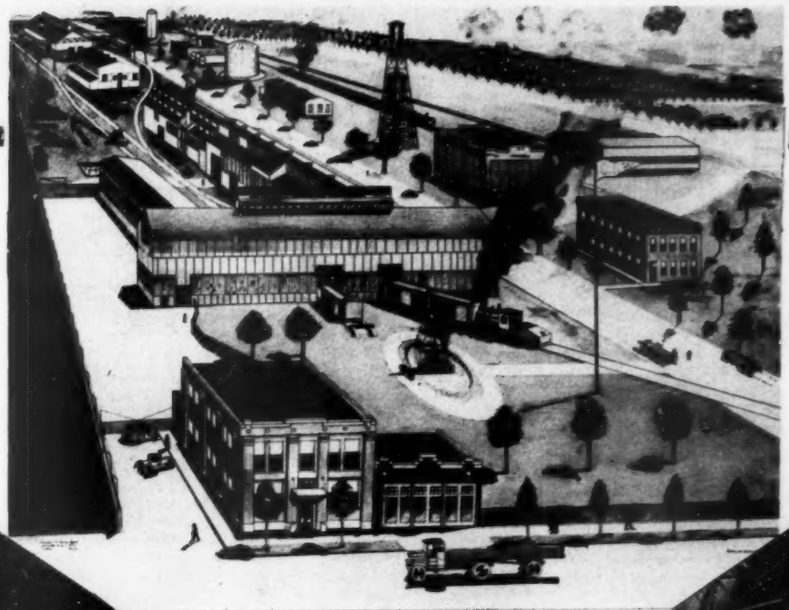
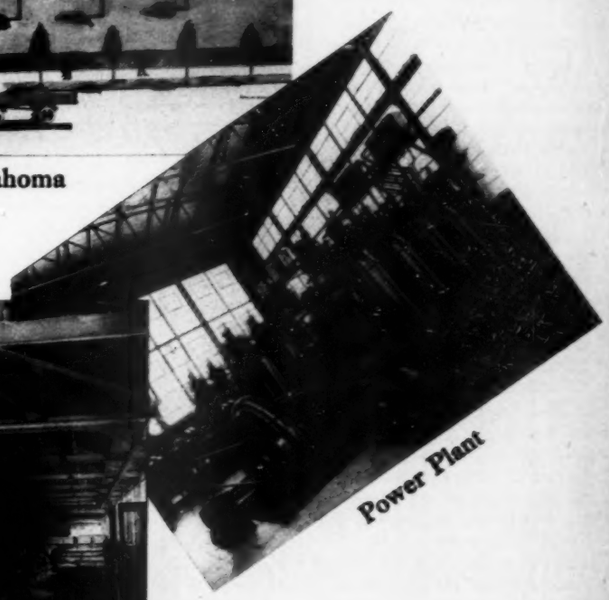




Plant at Tulsa, Oklahoma

Giant Steam Hammer

Battery of Lathes



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Gas Industry Educated the Public

When It Faced the Problem of a Depleted Supply It Took Its Case Directly to the People and Won Cooperation.

By Andrew M. Rowley

The chief problem of the natural gas industry is not overproduction but of conserving the available supply of Nature's wonder fuel and educating the consumers to utilize natural gas properly to the end that there will be a minimum of waste and maximum of service at reasonable rates.

Several years ago, natural gas men throughout the United States, through their own associations, chiefly the Natural Gas Association of America, and in cooperation with the United States Government, working through the Bureau of Mines, instituted a policy which has been of the utmost importance, not only to the industry itself but to millions of consumers. That policy provided for a full and frank publicity of the entire industry, covering production, transportation and distribution, and the education of all users of natural gas in the problems confronting the gas companies and in ways and means these users could help solve these problems.

Few industries of the nation have adopted so extensive an educational program, but the results already achieved have repaid many times over the great time and expense involved. The natural gas companies, too, worked under a considerable handicap for that industry is regulated to a great extent by Public Service Commissions which authorize rates and issue rules affecting service and the conduct of the business.

Realizing that the available supply of natural gas was being depleted rapidly; that unless this fuel were utilized properly without waste it would be but a matter of a comparatively short time until it would be exhausted, and knowing that as the supply became less, the expense of serving the public became far greater, the gas companies went directly to the public and explained the situation. The American public, ever fair when the facts in a case are presented to it frankly, has been quick to respond with the result that the pathway of the natural gas companies in their efforts to serve gas as cheaply and efficiently as possible and still make a reasonable profit has been smoothed to a great extent.

Told Public the Facts

It was shown the public through the newspapers, magazines, trade publications, lectures, demonstrations and advertisements that as the supply of gas in the field became less, the pressure became lower and the cost of procuring this gas became much greater. Costly compressor stations had to be built to raise the pressure to a point where the gas could be transported; additional pipe lines had to be laid to collect the gas; fields much farther away from consuming centers had to be reached, entailing enormous expense for pipe lines and booster stations, more wells had to be drilled at a cost which would have been regarded as prohibitive in former days, resulting, in brief, in constantly mounting expenses, greater investment and far greater overhead costs to procure the gas, transport it to consuming centers and distribute it to patrons of the gas companies.

The public demands service and these expenses were necessary to provide that service. But the public had to be educated to just what that service meant; to what it cost to have gas available at a simple touch in the homes every minute of every hour day and night, every day in the year, summer and winter. The consumers had to be shown that the vast amount of equipment required by the gas companies to serve the public during the peak demands of the winter months had to be paid for and that the 24-hour-a-day service had to be available during the summer months of the year when the demand was light as well as during the five winter months. In other words, the gas companies could get along very well with far less equipment and investment during the seven months of the year when the weather was warm, but had to install all the compressors, pipe lines and other equipment and drill more wells in order to give the public the service demanded during the five winter months.

Service Charge and Higher Rates

These facts were told the public in support of the service charge to which considerable objection was raised, many consumers failing to consider the fact that the 24-hour-a-day service was available to them in summer as well as in winter, and that it cost the gas companies considerable money to keep a gas supply readily available at the cooking stoves and hot water heaters in the homes, whether the patrons used this gas or not.

With the steadily mounting costs of supplying service the companies were faced with the necessity of procuring higher rates for their product. Past experiences had taught them that any application for higher rates was always met by a strong opposition from the public, led by politicians, ever anxious and willing to take a stand against any corporation or public utility in hope of procuring public favor. Much criticism was averted by a campaign of education which proved conclusively to the public that far less gas was necessary to give the most satisfactory service and that higher rates did not necessarily mean larger gas bills if common sense and proper appliances were used in burning the gas.

Costly Waste of Fuel

Natural gas experts showed that as high as 80 per cent of the gas metered into homes was wasted, and that it was a very easy matter for consumers to get the same service from one cubic foot of gas as they had been getting from three cubic feet. This meant cutting down the quantity used to one-third without detracting from the service procured. With higher rates, gas bills need not be larger and service would be just as satisfactory, in fact far more satisfactory in winter when waste of gas often causes gas shortages with the result that many consumers are unable to procure enough gas for their necessities.

Simple matters such as adjusting the height of burners on cooking stoves to within one and one-quarter inches of the bottom of the cooking vessel, the doing away with closed top stoves and the substitution of the open or grid-top type, the discarding of the policy of using old coal stoves as gas burners and other such questions of proper utilization were explained and demonstrated, with the result that less gas was wasted, more fuel was available, customers were better satisfied, there was less complaint in winter from gas shortages as these were eliminated to a great extent through doing away with the waste, higher rates for gas were permitted without great criticism or objection and gas bills were still held to a point where natural gas continues to be the cheapest fuel available for household use.

Aid of the Bureau of Mines

The United States Bureau of Mines deserves great credit for the results achieved in educating the public to a better utilization of natural gas and the conserving of the supply through the elimination of waste to the end this fuel will be available for a greater number of years. The Bureau of Mines officially endorsed an educational program of advertising started by members of the Natural Gas Association of America, this being the first time the government had given its official approval to any advertising campaign.

This cooperation upon the part of a government department has been of the utmost benefit to the natural gas industry as a whole. There is no regulation by the department, simply helpful suggestions and aid in procuring and disseminating facts of interest to natural gas companies and natural gas consumers. It is a splendid example of what can be accomplished by cooperation instead of harrassment and it is a matter worthy of consideration by men engaged in the production, refining and marketing of crude petroleum. Politicians ever ready to investigate the oil business and who are constantly agitating for government control of that industry might do well to investigate what has been accomplished in the natural gas industry through helpful cooperation by the United States Bureau of Mines.

This cooperation is exemplified by what had been done by the public service commissioners of the three principal natural gas producing and consuming states—Pennsylvania, West Virginia and Ohio. In conjunction with representatives of the natural gas companies and the Bureau of Mines, conferences were held and the entire situation affecting the natural gas industry discussed freely and above board. At one of these conferences held in White Sulphur Springs, W. Va., presided over by Mr. Rilling of the Public Service Commission of Pennsylvania, recommendations were adopted that the legislatures of these three states be urged to back up the natural gas companies in their efforts to have consumers properly utilize natural gas. These recommendations followed lines developed by investigation by the Bureau of Mines through the committee appointed by former Secretary of the Interior Lane.

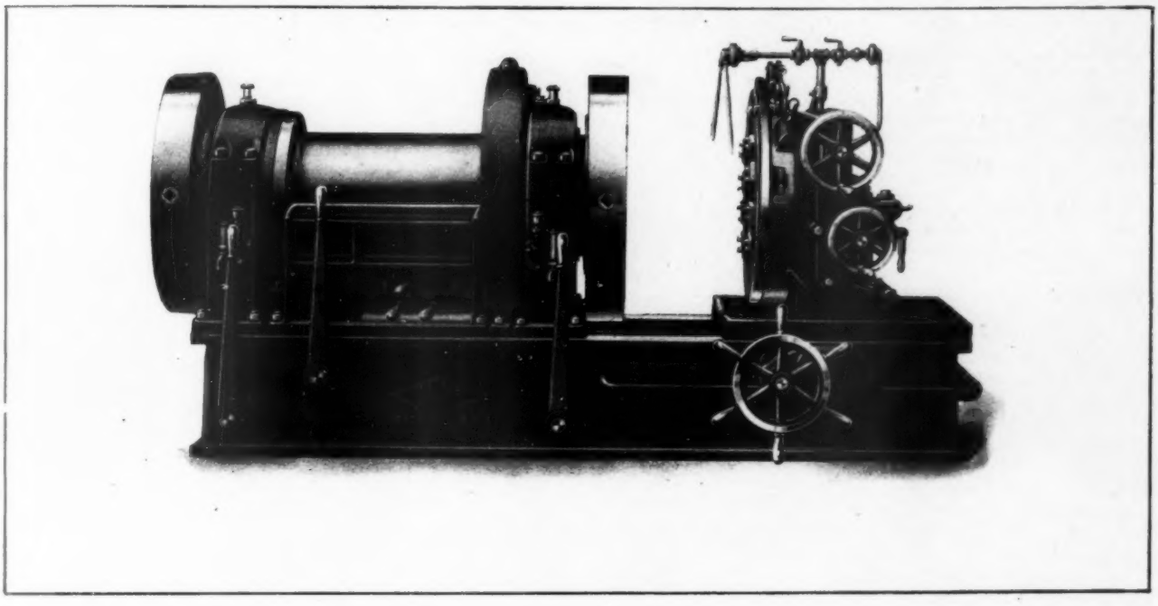
In this connection, a statement by the then director of the Bureau of Mines shows the situation. The statement says in part:—

"It is time for the public to take a new viewpoint on the waste of natural gas. It is time for the domestic consumer to realize that his duty is not done when he cries out against the flagrant waste occurring in the gas fields, and demands of his Government that such waste be abated; he must realize that he himself is likewise at fault and that it is time for him to set his own house in order. Furthermore, the domestic consumer must realize that these wastes do not concern him alone, and, consequently, he has not the right, merely because he pays for the gas, to employ it in any manner that pleases him, no matter how wasteful. Natural gas is a natural resource in which every inhabitant of this country has an equity. Those who waste gas do so at the expense of others who would use it efficiently. Natural gas is not replaced by nature and in comparison with the life of the nation, the duration of the supply will be brief.

"The public has a right, therefore, to demand that this natural asset be used to the greatest advantage and that no one be allowed to waste it. Natural gas in each city is a community asset and every consumer has a right to demand that wasteful use shall be prohibited in the interest of public service."

The 12-Inch Landis Pipe Threading and Cutting Machine

See it in actual operation at Booth B-1 and 2, International Petroleum Exposition, Tulsa, Okla., October 8-14, 1923.



LANDIS Pipe Threading and Cutting Machines have long since proven their worth in the oil fields of the world.

True, accurate, well formed threads in one cut on line pipe and casing is the duty which the Landis is performing successfully day after day.

The distinctive design of the Landis Chaser permits it to be ground to suit the nature of the material. The line contact with the pipe or casing insures a high cutting speed. The long life of the chaser and the simple grinding feature means low upkeep costs.

The Landis Chaser

The powerful construction of the die head and machines reduces repairs to a minimum and insures a long life under hard service conditions.

We will be more than pleased to demonstrate the 12" Landis Pipe Threading and Cutting Machine to you at Tulsa. Be sure to visit our booth and see this machine threading line pipe and casing.

Write for Catalog 27

The Landis Steel Die Head

LANDIS MACHINE COMPANY

WAYNESBORO, PENNSYLVANIA

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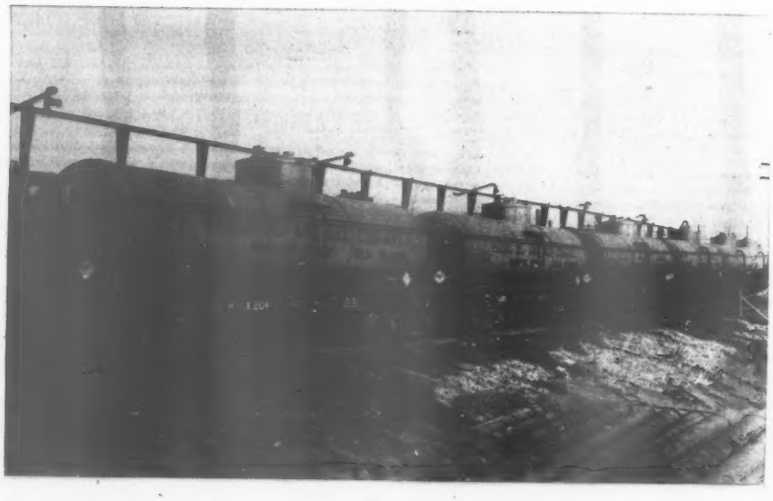

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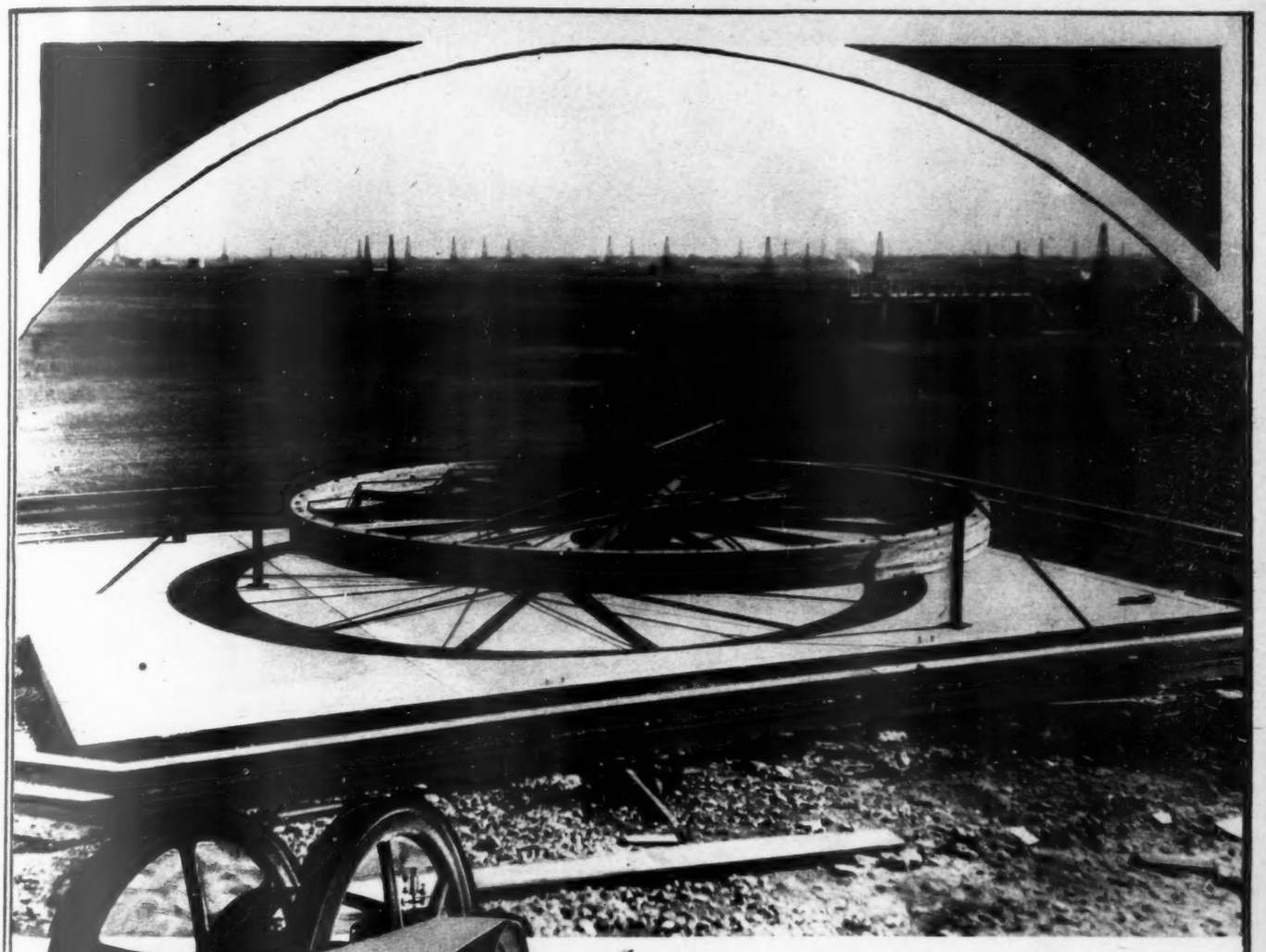

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A 24-inch friction lock clutch pulley with POSITIVE LOCK. This locking device makes it impossible for the clutch to slip. Installation of the DURNELL FRICTION CLUTCH PULLEY helps to solve your belting troubles. They are made to fit all engines.

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The Standard Pumping Power in the oil fields. Designed to meet your requirements in your pumping problems. The upkeep of DURNELL Powers is low, service of long, satisfactory duration. DURNELL BANDWHEEL POWERS are made in 14, 16, 18, 20 and 24-foot diameter sizes. For pumping wells up to 3000 foot depth we recommend the 24-foot power, because that power lessens belting troubles.

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7 *Handy to carry*—fits in the pocket

Specific Places and Uses Where Eveready Flashlights Protect the Oil Industry

—around the wells
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—on the pipe lines
—on loading racks
—around refineries
—around bulk stations
—in casing head plants
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—for quick repairs, often made on the spot
—for inspection of equipment; sprinkler heads and other appliances can hardly be examined without a flashlight
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—for the night watchman, who of course should always be equipped with a flashlight

For brighter lights and longer service, always use Eveready Flashlights and Eveready Unit Cell Batteries

EVEREADY FLASHLIGHTS & BATTERIES
—they last longer

Power and endurance combined make Columbia superior for heavy duty ignition!

—the waterproof steel case battery that defies the elements!

Besides the initial high power of this Columbia "Hot Shot" there's the fact that "they last longer." Its *economy*, as well as its energy, is an important factor in its supremacy for gas engine ignition and blast firing throughout the oil industry.

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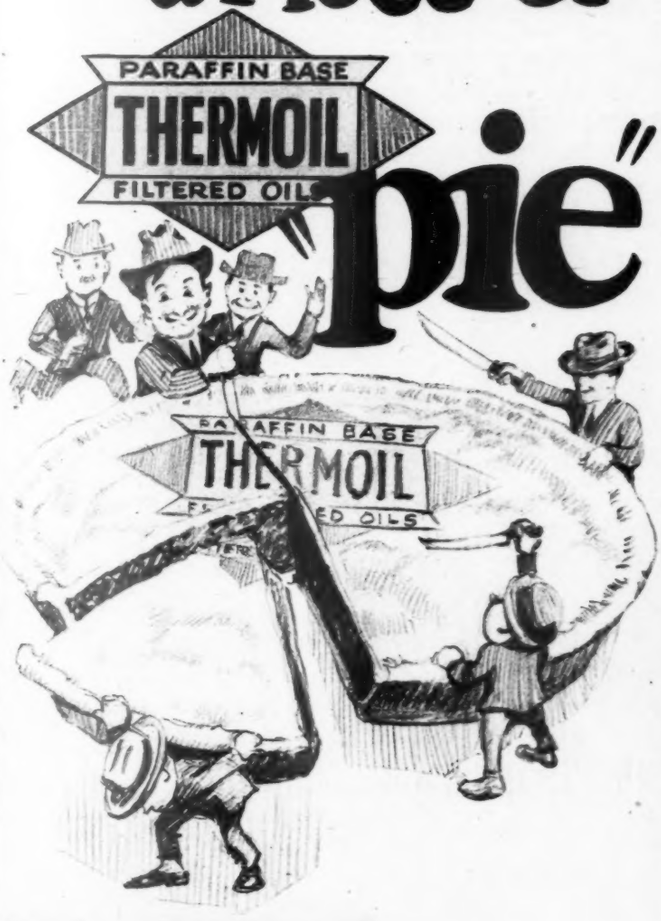
Oil Jobbers! Cut Yourself a Piece of "Pie"



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Last January we first announced a plan whereby the leading oil jobbers in each territory might acquire a participating interest in a National Trademark under which pure paraffin-base oils of standard specifications are being widely advertised and sold. We called it the

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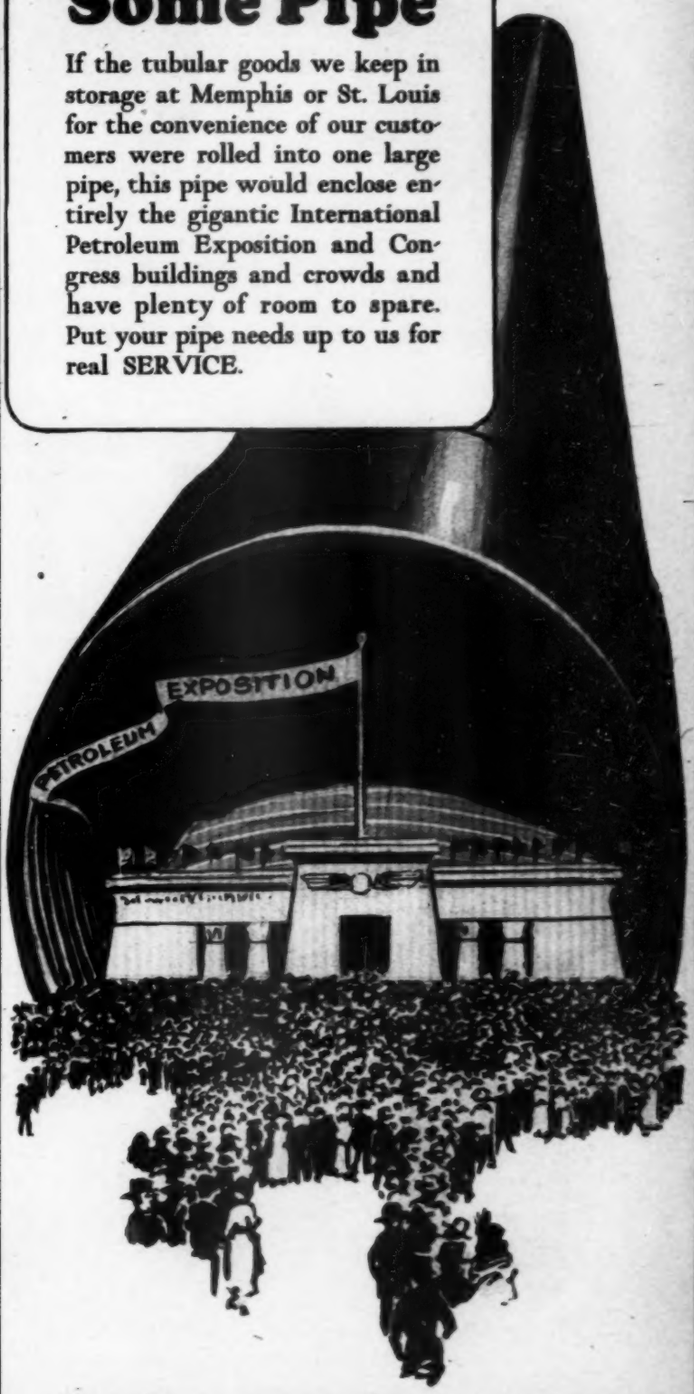

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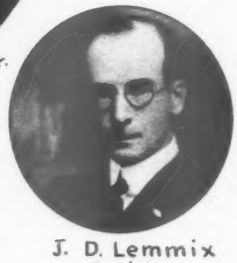

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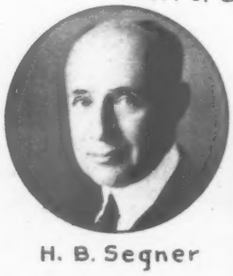

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A reliable meter is indispensable in every branch of Refinery work. The EMPIRE is such a meter.
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The Standard Jacks of the Oil Country

Simplex Jacks have thoroughly demonstrated their ability to stand up under the hardest service demanded in the oil country.

No. 310—15 tons

Their greater power and strength—easy one-way action—and utmost dependability have won the respect and endorsement of oil operators, drillers and rig builders in every field.

No. 310 Simplex is known far and wide as the standard Jack of the oil country. It operates at an angle or vertically—no other jack like it. Unsurpassed for extricating stalled motor trucks—raising and setting boilers—skidding rigs and moving tanks and machinery.

No. 22 Simplex of 10 tons capacity is also an unusually dependable and easy operated jack. Single acting-operating on the downward or easy stroke of the lever.

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Established 1899—Sole Manufacturers

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Simplex Jacks are recommended and carried in stock by leading oil well supply houses everywhere.

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Rig Contractors

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Osage 2260

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Mr. R. H. [Dick] Lee, Sales Representative, will be in charge.

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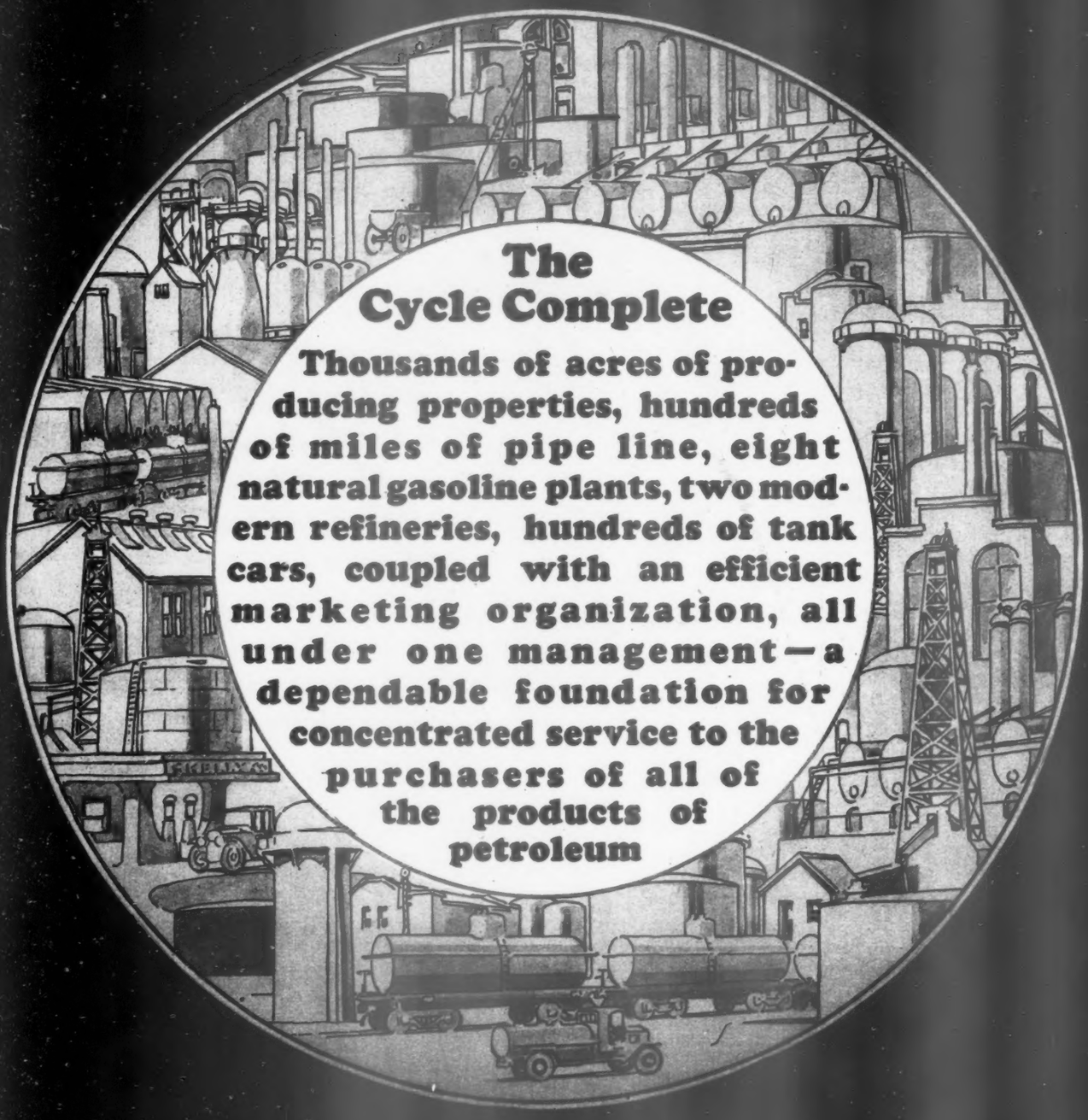

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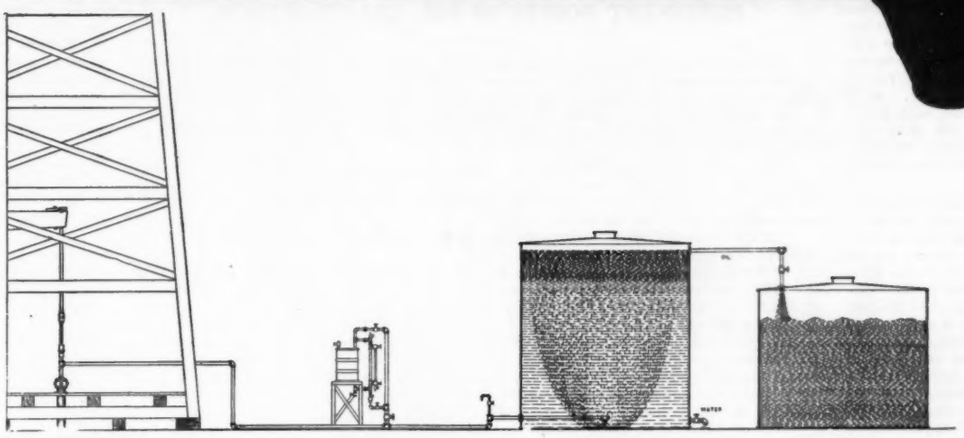
Tulsa, Okla. El Dorado, Kansas

TYPES of TRET-O-LITE PLANTS



No. 3—Low Pressure Tret-O-Lizer For Pumping Wells

This type of TRET-O-LITE Plant is suited to pumping wells in which gas pressures are low.

A 50-gallon TRET-O-LITE drum is used as TRET-O-LITE reservoir, same being fitted with a filling valve at top, a water gauge to show level of TRET-O-LITE, a sight-feed to regulate flow, and a gas riser.

A 2% solution of TRET-O-LITE is used, 1 gallon of TRET-O-LITE to 49 gallons of oil or soft water, depending on whether oil-soluble or water-soluble TRET-O-LITE is used.

The TRET-O-LIZER is over the flow line close to the well and 4 feet above the line.

Gas rises in the riser displacing the TRET-O-LITE in top of drum, the TRET-O-LITE flowing by gravity into the flow line. Mixing of the TRET-O-LITE with the emulsion takes place in the flow line, which should be at least 1,500 feet long unless a special mixer is used.

Oil and water separate in the Settling Tank. Pipe line oil flows from top of settling tank to pipe line tanks. Water is drawn off at bottom of settling tank, which should be kept about half full of water.

Cost of treating fresh cut oil or tank bottoms is the lowest known—½ cent to 2½ cents per barrel of oil recovered from fresh cut oil. Ask for our fully descriptive book.

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Distributors Should Inform Consumers

Public Ought to be Given Facts About Producing Branch W. H. Gray Tells American Oil Men's Association at Chicago.

By W. H. Gray
President National Association of Independent Oil Producers

I am sure the great mass of consumers of petroleum products do not appreciate the difficulties encountered by those who have the burden of finding and producing the raw products from which the fuel is derived to motorize the country. It is the duty of the distributor, who comes in closest contact with the public, to familiarize himself with these problems and to educate the consumer into a better understanding of them.

It is without fear of contradiction that I say to you, that the small producer throughout the country is in just as great a distress today as is the farmer or the cattleman. Continuous cuts in the price of crude oil has brought him to the verge of bankruptcy. Out of a total of 285,000 wells in the United States, it can be said without fear of contradiction, that more than 250,000 are operating today at an actual loss, and many of them have been operating at a loss throughout the entire year, and it is to make a plea for these small well operators that I appear before you today. Many of you, no doubt, are familiar with the evolution of an oil field, but the great mass of people throughout the country have no complete picture in their minds as to the discovery and the development and the passing of an oil field. Let me give you the picture as it frames itself in my mind.

Discovery of Oil

Out yonder somewhere, maybe in some of the great States of the Middle West; maybe amid the orange groves of California, or maybe along the mountain ranges that traverse Pennsylvania and West Virginia, there is a little village. Perhaps it may not even be on a railroad—maybe only a post office, but it is a place where the people of a community gather. One day there comes into the little community a "wildcatter"—a man who is going to prospect for oil. He is one of those restless spirits with an indomitable courage who is willing to gamble his all that he can find oil in the neighborhood of this little community. Out into the country he goes, searching for the most likely looking spot upon which to start the drill. He builds a derrick, moves in a load of machinery and pipe, and all the people in that community are curious to see what is going to happen. Almost over night the conversation in the community changes, the usual gossip is forgotten and the talk is all about oil and leasing the farm. Ours is not a business that is carried on in the cities; it is a business that is carried on altogether in the country among the farmers and with the farmers. We lease their farms and drill upon them; we employ their boys; we buy their butter and eggs; we bring to them the hope of wealth and success.

Oil as a Magnet

After a time the drilling of the well in this little community proceeds, the drillers arrive, the well is started, and on Sunday you can see a continual stream of the people in the village winding their way out to the "oil well," and after perhaps some months, sometimes years, of research work, some afternoon someone rides hurriedly into the village and spreads the glad tidings, "We have struck oil." The report is telegraphed to the four corners of the earth, and, as if by magic, the little town fills with scouts who are employed by the large oil companies and with speculators desiring to "get in on the ground floor." Prosperity at once abounds in the community, the hotels are filled with people, the private residences must be commandeered to take care of the onrushing crowd, and out yonder, perhaps 6 or 8 or 10 miles from this village on the hillside, where but a few short weeks ago there had been nothing but the little farm with its owner or its tenant, there is now the scene of the greatest activity. Within a few short months this once quiet community bristles with many new derricks which at night fairly glitter with electric lights. The roads are choked with long caravans of six-horse teams and great fleets of six-ton trucks plowing and grinding their way into this new oil field with their burden of boilers, pipe, household goods, lumber and every conceivable thing which goes to make up the equipment of the new oil field. Over there, not far away from the oil field, thousands of men are concentrating and are feverishly working to complete pump stations, great storage tanks, laying pipe lines to take care of the oil, the volume of which is constantly increasing as new wells in the field reach the prolific sand.

Spirit of Pioneering

To be along the roadway leading into the new oil field, watching this tremendous activity, gives to one the idea that some great battle is under way and the commander is moving men and material into some sector where the main part of the fighting is concentrated. To visit one of these fields at the height of its activity is all-inspiring, the pulse quickens, the spirit of speculation is aroused. It brings back to most of us the spirit of pioneering, inherited by all true Americans from their forefathers. We want to get in and dig the soil; we want to get in and build a house, a derrick, a camp, and one that will be the pride of the field. And so, for perhaps two or three years, the work of the development of this oil field is pursued with relentless energy until it is completed. The limits of the field are defined; there are no more locations for producing wells to be found; there is no more work to be done. The activity in this great field comes to a close and the brawny men who created it, like the Arab of the desert, fold their tents and quietly steal away.

Four or five years elapse since the scenes of activity in this once great field in which many of us perhaps were active in developing. We have not visited this field for a number of years. We have been busy, perhaps, chasing some new rainbow, but something calls us back, and so some day, when the weather is fine, we make a visit to the old oil field which recalls to us so many exciting memories. We want to see the farm which we developed; we pass into the village and, strange to say, it hasn't changed a great deal. It has resumed the quiet that surrounded it when first the "wildcatter" found it and so we move on until we come to the fields, once the scene of such great activity, but how changed! All is now silent, the great caravan has dispersed; no longer is heard the steady rat-tat-tat of the pneumatic hammer riveting the great oil tanks together.

Down to Pumpers

The little town and the numerous boarding camps which sprung up over night are deserted. Gone is the well driller; gone is the rig builder; gone is the great machinery which was used in drilling the wells; gone are the great derricks which silhouetted the skies of an evening and which glittered with electric lights at night. The only sounds left to attract the attention of the casual traveler is the twinkle of the cow bell on that old farm and the bark of an occasional gas engine pumping those hundreds of old wells, once the pride of the speculator, but now making only a barrel of two barrels of oil per day. Monuments marking the spot where once trod the foot of some giant speculator in oil? No. These small wells scattered among millions of acres of land throughout the length and breadth of the United States are the backbone of the petroleum industry of this country. It is the aggregate of these upon which the public must depend when new pools are not forthcoming. It is these several hundred thousand wells scattered out through the country, linked as they are with the farmer who own the royalty and whose team of horses is constantly employed to pull the rods out of these wells and change the cups upon them, and whose boys are employed around them, that make for the happiness and prosperity and welfare, not only of the community where they are situated, but for the country as a whole.

It is in defense of these small wells and of the men who are engaged in looking after them and of the farmer whose prosperity and happiness depend upon them, that I come here.

Cost of Finding and Producing

Let me now point out to you something of the actual cost of producing oil from the many small oil fields which are left over after the flush production has disappeared and the new field of today has become the oil field of tomorrow.

I have here with me, some figures very recently gathered by Mr. Harry Smith of the Mid-Continent Oil and Gas Association, which he has been kind enough to let me use for this occasion. These figures are not what we call "estimates," they are actual costs and you may use them without any fear of contradiction.

The oil producers desire to emphasize before the world the very temporary character of the present volume of new supply and demand that the public take notice of the fact that the recent price cuts bringing Mid-Continent crude to a level of from 50 cents a barrel to $1.30 a barrel (it will be borne in mind that very few old wells produce any 40 gravity crude), places in jeopardy the existence of more than 250,000 wells upon which the country must rely for its crude oil when the flush pools recede.

Oil is produced under so many different and varying conditions that it is impossible to find and state an accurate and reliable average cost figure. No general survey of such costs has been attempted (although one is now contemplated) but the Mid-Continent Oil & Gas Association has, on various occasions, inquired into the matter to a limited extent.

Figuring Average Cost

In 1920, an examination of the books of 21 representative Oklahoma oil producing companies and individuals, each of whom was a competent, well equipped operator with a large number of wells of varying ages and localities, revealed the following average cost per barrel of 25,860,405 barrels produced:

Lifting expense	.5222
Overhead expense	.2007
General expense, including lease rentals	.7041
Depreciation of machinery and equipment	.2454
Total, excluding depletion	$1.6724

These companies operated 8,628 wells on 1,266 leases for one year and thus produced an average per operator of 1,231,448 barrels of 8.1 barrels per well per day. While this examination only covered about one-fifth of the oil produced in Oklahoma that year, it is believed that the costs shown are fairly representative and not materially different from present day costs, for while wages and some materials have declined slightly, the costs of acreage and of completed wells have advanced sharply. The average cost of a 2,500-foot well in 1912 was $12,000. Today the oil is being found in much deeper horizons and the average cost per well is near $40,000.

It will be noted that the cost figure of $1.67 above quoted, includes operating expense and the cost of carrying undeveloped acreage, but does not include depletion charges through which the operator has returned to him the original purchase price of the lease plus capitalized development outlay.

Cost of Small Wells

Since the more serious aspect of the proposed price reduction has to do with the old, small wells which are producing about half of our oil, the writer undertook in July this year to assemble whatever data there was available concerning the actual operating cost on wells producing four barrels or less per day.

(Continued on Page 172)

PERTINENT POINTS IN MR. GRAY'S SPEECH

The great mass of consumers of petroleum products do not appreciate the difficulties encountered by those who have the burden of finding and producing the raw products from which the fuel is derived to motorize the country.

It is the duty of the distributor, who comes in closest contact with the public, to familiarize himself with these problems and to educate the consumer to a better understanding of them.

The small producer is in just as great distress today as the farmer or the cattle man. Continuous cuts in the price of crude have brought him to the verge of bankruptcy. Of the total of 285,000 wells in the United States more than 250,000 are operating today at an actual loss.

Of the wells drilled in Oklahoma and Kansas in the 18 months ending June 30 last, 82 per cent were failures.

Four thousand dry holes, costing $15,000 to drill, means a loss of $60,000,000.

The producing industry is constantly on the red side of the ledger, being required, if production is kept up, to put more money into the business than is taken out. The strictly producing branch of the oil business is not self-sustaining.

A total future production of 900,000,000 barrels is involved in the output of 210,000 wells producing approximately two barrels each per day. If these are abandoned because of low crude prices the country faces a staggering economic loss far outweighing the amount of any reduction in the price of gasoline temporarily accorded through the reduction of crude prices at this time.

Unless there is a quick change in the situation surplus stocks of oil will be substantially wiped out in 1924 and 1925. By February our production will be 500,000 less than it was in midsummer. For these reasons, the major buying agencies should without delay raise the price of crude oil in order that the country may not be faced with the worst shortage it has ever seen.

How Wall Street Continues West to Tulsa

WALL STREET doesn't end at Broadway. Invisibly it continues west from the Money center of the world to the Mid-Continent Oil Field. Broad and Wall in New York is very close to Third and Boston in Tulsa. Wall Street KNOWS before it acts on oil finance. To a great extent, it learns what it desires to know about men, firms, properties and production from the Exchange Banks of Tulsa. Complete reports by wire to Eastern correspondents and depositors. Western depositors benefit by the more intimate knowledge available to us through close personal relationship. It is worth much to be a depositor with the Exchange Banks of Tulsa.

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EXCHANGE BANKS OF TULSA

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Combined Resources Exceed Forty Million Dollars—

Jensen Sees California's Surplus End

Tells Geologists, After Survey of Every Field on the Coast, States Consumption Will Equal Production by July

By Joseph Jensen

Chief Geologist, Amalgamated Oil Company. Read at California Meeting of American Association of Petroleum Geologists.

The oil industry wants California to answer two vital questions, and California is just as interested to know the answers as is the oil industry. These two questions are, first: "When has, or when will California reach its peak of production during the present overproduction of oil" and second: "When will the consumption of California and the western seaboard equal or exceed the production of California?" The oil industry wants answers to these questions, because California production now affects the oil markets of the world. California desires answers in order that justification may be had for the policy of storing oil, and building new storage. If an excess of oil for storage is to continue indefinitely, no organization is large enough to meet the situation. If the condition promises to have a definite end, it is important for California that as much oil be retained within the State as possible. Neither the industry nor California can continue indefinitely under the present load.

Definite opinions may be expressed as to these two questions, but the future alone will give the final answer. The purpose is to discuss these two questions and consider the factors bearing upon them.

No Surplus Second Half 1924

Answers proposed as a result thereof are, first:

California is producing its maximum at the present time.

Second: There will be no surplus production during the latter part of 1924, even assuming that beginning next January oil now shut in in the older fields is produced as freely as oil is now produced in the newer fields.

These answers are based upon a study of conditions in all of the fields. Those of most interest are Santa Fe Springs, Signal Hill and Huntington Beach. As to the older fields, the statistics quoted are those of July, 1923:

The Kern River Field has 2,166 wells producing 19,500 bbls. per day. These wells have an average drainage area of 2.4 acres. Very little drilling is being done and its production is perhaps the most settled of the State. No production is shut in. Estimated January 1924 production is 19,800 bbls. per day. Estimated December 1924 production is 19,200 bbls. per day.

The McKittrick Field has 277 producing wells. These wells have a drainage area of about 2 acres per well. Very little drilling can be done, and production is declining slowly. It is now producing at the rate of 6,000 bbls. per day, and there is only a small amount of shut in production. Estimated January 1924 production is 6,000 bbls. per day. Estimated December 1924 production is 5,700 bbls. per day.

Midway Sunset

The Midway Sunset Field has 2,078 producing wells, but a year before had 2,542, and the difference probably represents some wells entirely shut in. These wells are located, one well to each 5 acres. Its production is now 73,200 bbls. per day. The production should decline very slowly. If conditions warrant, additional drilling will be done during the latter part of 1924. Estimated January 1924 production is 81,000 bbls. a day. Estimated December 1924 production is 77,300 bbls. a day.

The Elk Hills Field has 94 wells producing, but a year ago there were 153 producing wells, the difference being approximately accounted for by shut in production. Each well has an average drainage area of 8 acres. The field is now producing 23,700 bbls. per day. There are a large number of drilling locations and conditions will probably require the bringing in of new production by July of 1924. Estimated January 1924 production is 21,000 bbls. per day. Estimated December 1924 production is 28,000 bbls. per day.

The Lost Hills Belridge Field has 284 wells producing 3,800 bbls. per day, but a year ago there were 516 producing wells, spaced one well to each 4½ acres. This production has declined rapidly, but is now partially shut in. Very little drilling can be done in this field. Estimated January 1924 production is 4,800 bbls. a day. Estimated December 1924 production is 3,300 bbls. a day.

Coalinga

The Coalinga Field has 676 wells producing, with a daily production of 13,211 bbls. but a yer ago there were 1,219 wells, spaced one well to 6.1 acres. A large amount of the production has been shut in, estimated as high as 30 to 50 per cent. Estimated January 1924 production is 30,000 bbls. a day. Estimated December 1924 production is 27,100 bbls. a day.

The Santa Maria Field has 327 wells, producing 6,400 bbls. of oil per day. These wells are spaced one well to each 10½ acres. The Santa Maria Field is shut in to a large extent. Estimated January 1924 production is 12,600 bbls. a day. Estimated December 1924 production is 11,770 bbls. a day.

Summerland and Watsonville are two small fields from which no new production will be secured. The former produces 150 bbls. a day; the latter about 50 bbls. a day.

Wheeler Ridge is a new field at the southern end of the San Joaquin Valley. The anticline is a very sharp one. Some new production will be secured but the field has not shown characteristics sufficiently strong to justify expectation of large production. One well was completed in July with an initial daily production of 285 bbls. Only nine wells are drilling, and one new rig has been erected. Estimated January 1924 production is 300 bbls. a day. Estimated December 1924 production is 400 bbls. a day.

Ventura

The Newhall and Ventura County district embrace a very large area from which a production of 10,632 bbls. per day is being secured from 538 wells, scattered through many oil fields. The Ventura Avenue anticline alone will be a source of new production. Land on this structure is held by a few of the larger companies, so drilling will be well controlled and at a very slow rate. In the entire district there are only 41 wells drilling and on the Ventura Avenue anticline wells have been completed at a rate of less than one per month. Estimated January 1924 production is 11,300 bbls. a day. Estimated December, 1924, production is 13,200 bbls. a day.

The Old Salt Lake Field is producing from 276 wells at a daily rate of 2,500 bbls. Such new drilling as may be done will not materially change the production it can make. Estimated January 1924 production is 2,400 bbls. a day. Estimated December 1924 production is 2,100 bbls. a day.

There is an extremely large number of old wells producing in the Los Angeles City Field, but these pump only at the rate of about 1 bbl. per day. Estimated January 1924 production is 600 bbls. a day, with the same figure for December 1924.

The Montebello-Whittier Field is producing 12,000 bbls. of oil per day from 300 wells. There are only seven drilling wells. A steady but gradual decline of production may be expected. Estimated January 1924 production 15,700 bbls. a day. Estimated December 1924 production is 12,800 bbls. a day.

Coyote and Fullerton

The Coyote Field is producing 2,500 bbl. of oil a day from 111 wells. A year ago the field was producing from 228 wells, spaced one well to each 5 acres. A year ago the field produced from 20,000 to 25,000 bbls. per day. Production is shut in perhaps more than in any other field. Estimated January 1924 production is 18,100 bbls. a day. Estimated December 1924 production is 17,000 bbls. a day.

The Fullerton Field is producing 11,200 bbls. of oil per day from 384 wells, and the shut in production amounts to

(Continued on Page 210)

ESTIMATED PRODUCTION OF CALIFORNIA FOR THE YEAR 1924, NORTHERN FIELDS

Field—	Jan	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Kern River	19,800	19,800	19,800	19,700	19,600	19,600	19,600	19,500	19,400	19,400	19,300	19,200
McKittrick	6,000	6,000	6,000	5,900	5,900	5,900	5,800	5,800	5,800	5,700	5,700	5,700
Midway-Sunset	81,000	80,700	80,300	80,000	79,700	79,301	79,000	79,600	78,300	78,000	77,600	77,300
Elk Hills	21,000	20,500	20,000	19,500	19,000	18,500	20,000	21,000	23,000	24,000	26,000	28,000
Lost Hills, Belridge	4,800	4,600	4,500	4,400	4,200	4,100	3,900	3,800	3,700	3,600	3,400	3,300
Coalinga	30,000	29,700	29,400	29,200	28,900	28,700	28,400	28,100	27,900	27,600	27,300	27,100
Santa Monica	12,600	12,500	12,500	12,400	12,300	12,200	12,100	12,100	12,000	11,900	11,800	11,700
Summerville	150	150	150	150	150	150	150	150	150	150	150	150
Watsonville	50	50	50	50	50	50	50	50	50	50	50	50
Wheeler Ridge	300	300	300	300	300	300	300	300	300	400	400	400
Total	175,700	174,300	173,000	171,600	170,100	168,801	169,300	170,400	170,600	170,800	171,700	172,900
SOUTHERN FIELDS												
Newhall & Ventura	11,300	11,500	11,700	11,800	12,000	12,200	12,300	12,500	12,700	12,800	13,000	13,200
Salt Lake	2,400	2,300	2,300	2,300	2,300	2,300	2,200	2,200	2,200	2,200	2,200	2,100
Los Angeles	600	600	600	600	600	600	600	600	600	600	600	600
Montebello-Whittier	15,700	15,400	15,100	14,900	14,700	14,400	14,200	13,900	13,600	13,300	12,100	12,800
Coyote	18,100	17,900	17,900	17,700	17,600	17,500	17,400	17,300	17,200	17,100	17,100	17,000
Fullerton	11,700	11,5..	11,400	11,300	11,200	11,100	10,900	10,700	10,600	10,400	10,300	10,100
Richfield	15,000	14,700	14,400	14,100	13,800	13,500	13,200	12,900	12,600	12,300	12,000	11,900
Hunt. Beach	54,000	52,000	49,000	46,000	44,000	42,000	38,000	35,000	33,000	29,000	27,000	25,000
Signal Hill	205,000	171,500	128,000	101,000	84,000	75,000	64 000	56,000	48,500	42,500	36,000	31.000
Santa Fe Springs	216,000	184,000	154,000	130,000	113,000	102,000	92,000	82,000	72,000	62,000	52,000	42,000
Torrance, Redondo	8,000	9,800	11,300	12,500	14,300	15,800	17,300	18,000	20,300	21,800	23,300	25,000
Compton	1,000	1,000	1,000	3,000	3,000	2,500	2,500	4,000	4,000	6,000	8,000	10.000
Total	558,800	492,200	416,700	365,200	330,500	308,900	284,600	265,100	247,300	230,000	213,600	200,700
Total Northern and Southern Fields	734,500	666,500	589,700	536,800	500,600	477,701	453,900	435,500	417,900	400,800	385,300	373,600

DAILY AVERAGE PRODUCTION FOR CALIFORNIA ACTUAL AND ESTIMATED

Year—	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1920	274,510	275,928	276,875	276,148	278,853	272,908	274,576	289,853	304,218	305,146	310,734	332,658
1921	325,410	328,104	338,544	338,992	336,941	337,045	329,844	323,227	261,980	227,865	293,616	325,631
1922	313,472	323,585	330,663	339,536	359,594	357,731	374,138	382,221	406,838	432,885	467,851	497,639
1923	530,885	586,670	632,522	689,865	694,689	765,670	814,906	877,976	900,807	867,807	821,307	748,807
1924	734,500	666,500	589,700	536,800	500,600	477,701	453,900	435,500	417,900	400,800	385,300	373,600
DAILY AVERAGE CONSUMPTION (LESS SHIPMENTS THROUGH THE PANAMA CANAL) ACTUAL AND ESTIMATED												
1920	303,886	307,809	312,446	290,624	295,551	311,773	304,325	320,902	313,371	324,620	311,868	333,399
1921	316,403	317,401	294,932	305,216	254,476	277,370	273,185	253,824	268,689	247,677	296,442	273,694
1922	273,499	302,977	284,945	271,487	287,447	306,186	318,167	298,999	340,601	390,609	396,021	461,503
1923	447,229	417,107	437,228	428,950	471,602	443,428	419,874	549,276	439,500	440,650	441,800	442,950
1924	444,100	445,250	446,400	447,550	448,700	449,850	451,000					

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Such an institution has always been a need. Present prevailing conditions in the Petroleum industry make the need acute. Founded this year in Tulsa on a splendid and magnificent scale, it is destined to become a vital factor in the future progress of the industry. An institution which will grow in importance and benefits throughout the years.

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Representing the great majority of Western Refining interests meeting—
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Mid-Continent Oil and Gas Association
Representing the most important of the producers of the Mid-Continent fields.
TULSA OCT. 8-14

Southwestern Business Congress
That great 'get-together' of commercial interests founded in Tulsa 1922 for discussion and betterment of business and economic conditions of the Southwest.
TULSA OCT. 8-14

Scientific and Technical Societies
Practically every Scientific and Technical Society represented in the oil regions will convene at
TULSA OCT. 8-14

Purchasing Agents' Association
Convention of Purchasing Agents Ass'n. District No. 2
TULSA OCT. 8-14

Association of Natural Gasoline Manufacturers
The fall conference of the Association of the Natural Gasoline Manufacturers will be held in
TULSA OCT. 8-14

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Tulsa-Oct. 8 to 14

Santa Fe Springs, Calif., Decline Curves

Life of Wells With Future and Ultimate Production is Estimated by California State Mining Bureau.

Interesting facts about the Santa Fe Springs Field are given in the latest bulletin of the California State Mining Bureau. Speculation is rife as to the future life and probable ultimate production of the Santa Fe Springs Field as a whole, both from an investment standpoint as well as for income tax and assessment purposes. Production curves, decline curves, and curves attempting to show future and ultimate production, have been prepared by a number of engineers.

The field is still too young to obtain sufficient data to construct curves that can be considered anything like final. The reader should bear this in mind when studying the examples given, which represent, as nearly as possible what the final result will be from the data available. The examples are both instructive and interesting.

The curves indicate a life of approximately 49 months for a well that has produced 205,000 bbls. in its first month (6,800 bbls per day) and also an ultimate production of 1,020,000 bbls. for such a well. The length of life of the well is subject to pumping and probably the life of most of the wells in the field will be prolonged to 10 years or more by pumping after the flow has dropped to the pumping stage. The decline in flow during the first 12-month period is notable for its rapidity, indicating the sharpest decline of any field in California, and is similar in this respect to the Long Beach and Huntington Beach fields. The particularly sharp decline is attributed to the high gravity and consequent fluidity of the oil (35 Baume), high gas pressure, and relatively clean sands, all inter-related factors. Close spacing of wells does not enter into the rapid decline at the present time, as there are few Meyer sand wells in the field, and a slight sustaining effect due to their isolation is noted in the first months.

Decline Curves

In Figs. 1 and 2 are decline data contributed by the Research and Statistical Department of General Petroleum Corp. Fig. 1 gives an average curve for production from the Bell zone, also estimates of future and ultimate recovery. Fig. 2 shows the average curve for production from the Meyer zone, also estimates of future and ultimate recovery.

The future production curves were made by plotting the known production of a number of wells on logarithmic paper. A straight line was drawn to touch the majority of the points thus plotted, and continued downward to what was estimated as practically the limit of production. This limit was set at 5,000 bbls. per month for both the Bell and Meyer sand curves.

For those not familiar with the use of future or ultimate production curves the method of reading them is here explained. Take the last known monthly production on the vertical column, read horizontally across to the right to future or ultimate line, according to the figure desired, then read vertically downward to the bottom line where quantities desired are shown.

The decline in production in both the Bell and Meyer zones bears a marked relationship to the decrease in the gas pressure in the sands. There is, at present, an estimated waste of 117 million cubic feet of gas daily being produced with the oil. With this rapid waste of expulsive force, it is no wonder that production declined rapidly.

Sands of the Field

The straitgraphy of underground formations in the Santa Fe Springs Field is exhaustively dealt with in the report. The nearly continuous thick bed of shale underlying th loose, unconsolidated surface sands and gravels and overlying the gas zone, as the capping formation for it, is the first definite marker for correlations. In the highest portions of the field the distance from the bottom of this shale bed, or the top of the gas zone, to the top of the first known oil horizon or Foix zone, was found to be consistently 1,500 feet, to the top of the Bell zone 1,680 feet, and to the top of the Meyer zone 2,030 feet.

Some evidence has been presented, in gas showings logged, indicating that the gas zone is encountered at a depth of about 2,000 feet in all portions of the field regardless of the position on the structure, suggesting a possible unconformity between the gas zone and the underlying oil zones. There are no definite data to establish a relationship between these reported gas showings and the main productive gas zone. They may be higher accumulations of gas in sandy portions of the overlying shale bed or they may be a real part of the gas zone. However, the general consensus of opinion of engineers is that the top of the real gas zone is conformable with the underlying strata. Below the top of the oil horizon the stratigraphy is definite and reasonably certain. The gas zone, as established by the evidence of various blowouts, was at the most 600 feet in thickness, and the top of it was approximately 1,500 feet above the top of the first known producing sand. What exists in the remaining 900 feet of formation is yet unknown, but it is considered likely that the formation contains additional gas sands, possibly productive, because of the numerous showings of gas reported while drilling through this horizon.

Foix Zone

Only about four wells have attempted to produce from the Foix sand. Of these, two have since been deepened to lower sands. At present one well is producing 900 bbls. daily from the Foix zone.

The Foix zone has a thickness averaging approximately 180 feet. The productive possibilities of the remaining oil sands of the zone were not tested. It is generally considered by operators and engineers that there is water either in the Foix zone or between the Foix and Bell zones over the entire area. There is some evidence to the contrary, which shows that there are probably locations on the very top in which no water exists from the top of the Foix to the top of the Bell zone.

Those companies drilling within the limits of the Foix zone are casing their holes in such a manner and doing such protective work as is necessary to insure being able to obtain future production from this sand when the more prolific sands lying below may have been exhausted.

Bell Sand

The top of the Bell zone lies from 180 to 200 feet below the top of the Foix zone. The zone has a thickness of approximately 300 feet of practically continuous oil-bearing sand or sandy shales. The oil produced from the Bell zone has a gravity of from 30 to 32 degrees Baume, with a gasoline content of approximately between 3,000 and 4,000 bbls., under a pressure at the casing head or tubing of from 600 to 800 pounds. It was from this zone that operators raced to obtain production during the early months in the life of the Santa Fe Springs Field.

Those companies drilling within the areal limit of the Bell zone, and outside the areal limit of the productive portion of the Foix zone, set a water string just above the Bell zone after mudding the hole in a manner necessary to seal the oil- and gas-bearing formations thus cased off. To produce from the Meyer zone in these wells the oil-bearing formations of the Bell zone are sealed with mud fluid to protect them from infiltrating water before cementing the final water string above the Meyer zone. This practice is extended to a reasonable distance beyond the areal limit of the Bell zone, due to the possibility of valuable production in the lower portion of the Bell zone, which has not yet been tested. This does not add any hardship or additional expense to the operator, as it is considered necessary, in keeping with good operating practice, to have a second conductor string of casing set as deep as possible.

(Continued on Page 219)

Fig 1.

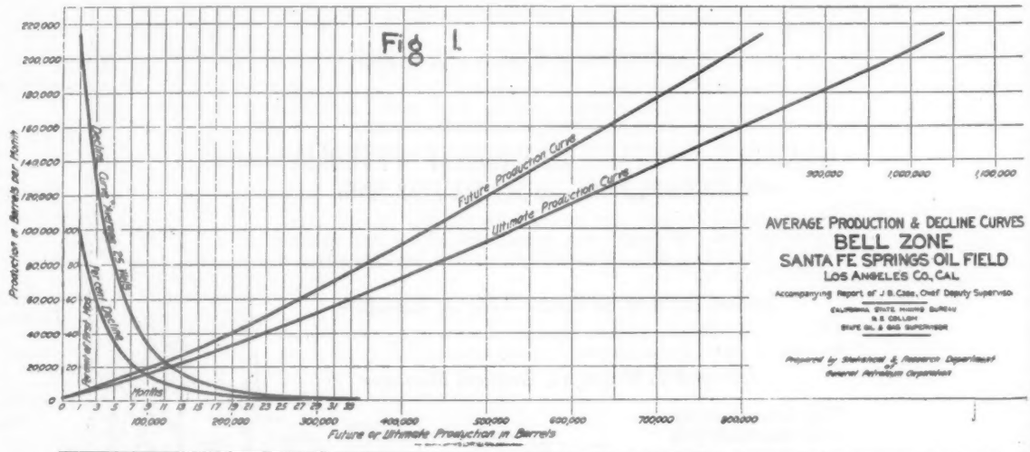
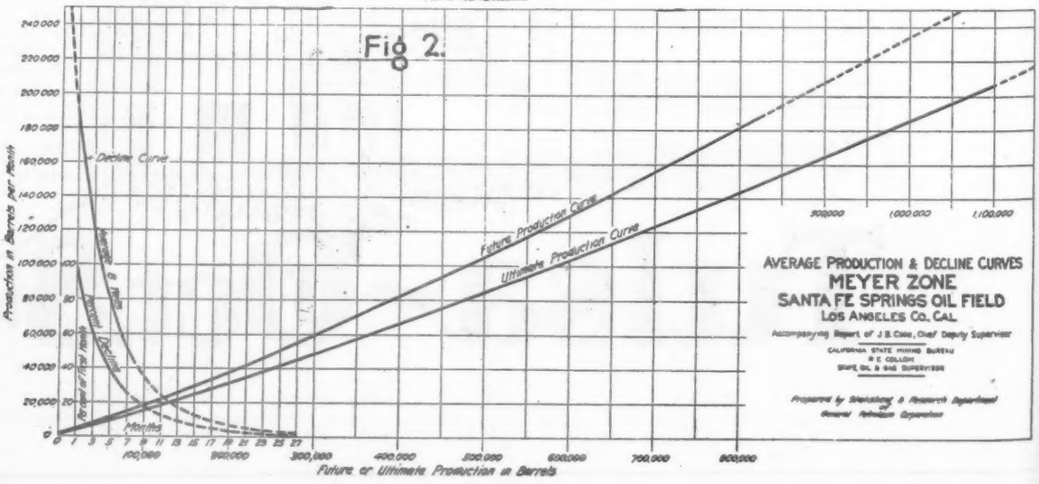

Future Production Curve
Ultimate Production Curve
Decline Curve Average 25 Wells for Last Producing Month
Months
Production in Barrels per Month
Future or Ultimate Production in Barrels
AVERAGE PRODUCTION & DECLINE CURVES
BELL ZONE
SANTA FE SPRINGS OIL FIELD
LOS ANGELES CO., CAL

Fig 2.



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Menace of Mexico May Demand Tariff

Potential Production of Oil Bearing Areas Yet Untouched and Accumulated Storage a Peril to American Industry.

By Charles E. Kern

WASHINGTON, D. C., Oct. 1.—Never in the history of the petroleum industry has there been greater need for a protective tariff and its products than at the present time. In the opinion of the best informed men in the industry the next year or two will witness a transformation in the oil industry of the United States. With increased consumption the oil industry will be enabled to keep its head above water and the producer may look forward to an era of prosperity along with other industries except for the threat of Mexican production which may be shipped into the United States to such an extent as to bring down the price of the home product to an uncertain and disastrous figure.

Mexican Possibilities

It is well enough to talk about the big gushers of Mexico going into salt water with that entire field diminishing in production. The Mexican salt water scare was based on very real elimination of many of the big producers, but the fact should not be overlooked that, after all, the Mexican oil field has merely been scratched. The potential oil producing power of Mexico is a problem that has not been solved, either by practical oil producers or by petroleum geologists. This oil field provided with cheap peon labor for a great many of the operations connected with oil production, with the possibility of developing more mammoth gushers, is a menace that cannot be provided against too soon.

Although the Mexican petroleum is inferior in quality in gasoline content and as a lubricating oil it is still petroleum well adapted for fuel oil purposes and capable of doing a great deal to break the oil market in the United States. There is not a single American industry comparable to that of petroleum that has not been protected in the Fordney-McCumber tariff act. The farm products of the Northwest, including wheat, barley and corn, were given protection by a tariff from Canadian competition although there was no such cheap labor employed in Canada for the production of these farm products as is employed in Mexico for many of the operations invovled in the production of petroleum.

Official Mexican View

The writer has recently received from Mexico through private sources a most interesting study of the general conditions regarding the petroleum industry in that country. This paper was prepared by the petroleum department of Mexico which is under the control of the Secretary of Industry Commerce and Labor and there is no reason to believe that the facts stated are not as reliable as any statement by one of our own bureaus. This paper comes in the Spanish language and is translated for the purpose of this writing. It was not intended for outside consumption but was an effort to place the facts stated before Mexican readers. Briefly it shows that the petroleum department of the Government of Mexico looks upon its oil industry as capable of developing to an enormous extent whenever there is a revival in the price of crude oil.

It is well known that Mexico has now settled its misunderstandings with the oil world and is in a better position to have its vast oil fields developed rapidly than it has ever been in its history. The American producer knows just where he stands before the Government of Mexico now that the difficulties of Article 27 of the Mexican constitution have been ironed out in dealings with our State Department.

Explorations in Progress

The petroleum department presents facts relating to recent activity in the exploitation of the Mexican oil field which shows that there is a large degree of activity there at this time. Up to July 31 of this year there have been issued 628 permits to drill oil wells. These were issued during seven months and were in all fields from the most reliable proven oil field to wildcat territory. Up to August 24 139 productive wells have resulted from the 628 permits, the initial production being 472,485 bbls. daily, or a total yearly average of 162,413,525 bbls. This statement would indicate a very large percentage of dry holes, but it must be remembered that the 628 permits represent many that have not yet been taken advantage of. They indicate the activity of oil drillers in preparing for operations.

The petroleum department presents statements of 619 productive wells with a daily potential capacity of 698 bbls. per well or an annual total of 254,770,000 bbls. The report of the Mexican petroleum department to the chamber of deputies made in November last by the commission of the national budget stated that the actual production for November, 1922, reached a total of 12,278,873 bbls. By the month of June, 1923, the production had reached 12,670,192 bbls. For the first six months of 1923 the production reached a total of 72,436,035 bbls.

Menace of Mexico

In order to get a comprehensive view of the menace of the Mexican oil fields to the oil industry of the United States it should be borne in mind that since the first well was completed in Mexico 22 years ago there has been a grand total of production of 978,164,509 bbls. This vast amount of oil came from a comparatively limited area while the petroleum geologists who have examined the Mexican oil fields declare that 150,000,000 acres are assuredly petroliferous and promise a vast oil production for the future. In this connection it is of interest to note that the average production per well in the Juan Casino, Toteco, Cerro Azul, Potrero del Llano, Tierro Blanca, Chapopote de Nunez and Alamo de Tuxpan districts, where the chief oil production is found, is 1,000 bbls. per day while in our own State of California the average daily production does not reach 70 bbls. per well.

The foregoing indicates the potential oil production of Mexico in a very general way; the actual production during the last several months, although shown to be large, having been greatly reduced by the decline of the price in crude oil. Three weeks ago the price of Tuxpan crude oil had fallen from $1.25 per barrel free on board at exporting points to $1 per barrel. Panuco crude had declined from $1 per barrel to 75 cents per barrel. Practically the only limit to the amount of oil exported from Mexico is the amount of facilities of those engaged in the business and at this time such facilities are being purposely limited or cut off all altogether as a result of the low price of the oil market. With 81,926,506 bbls. of crude oil in storage in Mexico, the amount available for export as soon as the market is able to take it at a higher price seemed to be very large. To the personal knowledge of men familiar with the Mexican petroleum industry there has been no time in the history of that industry when the shipping facilities anywhere nearly approached the potential production.

Storage for Export

It should be remembered that the 81,926,506 bbls. of crude oil now in storage in Mexico are not held there for any prospective refining interests in that country. They are held purely for the purpose of exportation which is shown by the fact that local consumption for the first six months of 1923 was only 7,543,069 bbls., the exportation during those six months being 67,666,014 bbls.

Not only is the crude oil of Mexico threatening the producers of crude in the United States but refining industries are developing there to compete with refineries across the border and within the United States. There are now 17 refineries in operation, which is a large increase over previous years with a bare local consumption of a little more than 15,000,000 bbls. annually. These refineries consume 473,000 bbls. of crude petroleum daily from which are derived large supplies of fuel oil, gas oil, gasoline, illuminating oils, lubricants, paraffin, asphalt, etc., all in competition with American refineries because nearly all of this product goes abroad.

Pipe Line Capacity

The menace of the Mexican petroleum industry to the oil producer in the United States is emphasized by the fact that at the present time the pipe line systems of Mexico have a capacity for transporting 1,122,235 bbls. of oil daily, from the wells to the ports of departure, this pipe line capacity being sufficient to take care of a vastly greater production than has ever been attained in Mexico. In addition to that there in a flotila of tank barges having a daily capacity of 200,000 bbls. and carrying oil from the various wells adjacent to the Panuco River to the shipping points at Tampico. At Tampico the storage tanks have a total capacity of 81,926,506 bbls. Of the 1,870 storage tanks there are 1,839 of steel construction.

The foregoing presents some indication of the competition that is in store for the oil producer of the United States. With a menace such as this the American oil producer can look forward to the establishment of the industry on a paying basis only with misgivings because, whenever the market begins to improve in this country, a flood of oil produced from great flowing wells by cheaper labor may flow over our borders to depress the price permanently. Henry L. Doherty has recently pointed out that at this time only 5,000 of the 285,000 oil wells of the United States are on a paying basis so that in his opinion relief is bound to come very soon. But that relief can only come either with a reduction of production and consequent disaster to the producer or with increased consumption. With a great flood of oil held in Mexico with the idea of shipping it to the United States as soon as the American market improves it will be seen that the oil producer will only escape from its present predicament to be met by another equally disastrous.

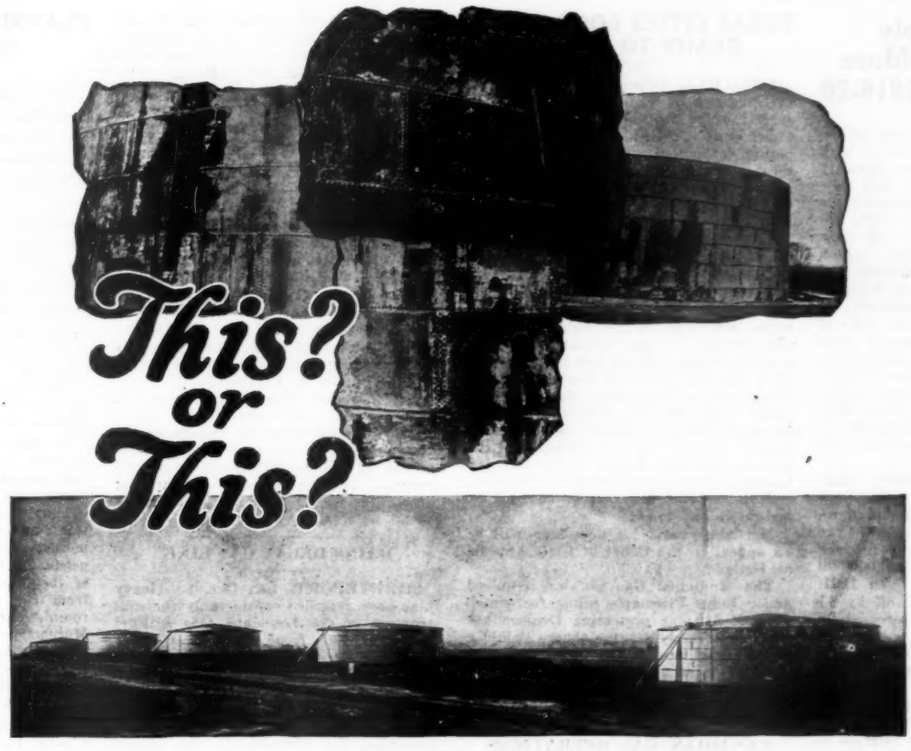
Tariff a Solution

The only possible solution of this problem is a tariff on petroleum which will give to the oil industry the same protection that the tariff law gives to other industries. As it is not likely that tariff legislation will be enacted at the coming session of Congress the discussion of such legislation is academic in its nature. It is a fact, however, that academic discussions precede practical efforts. If the oil industry exhibits the same lethargy in the future that it has shown in the past it will require several years to awaken oil producers and refiners to the fact that their prices are depressed by foreign importations and that they should demand proper treatment by Congress.

It is a perfectly open secret in Washington that the Fordney-McCumber tariff bill gave no protection to petroleum because the Standard Oil Co. was flaunted before Congress, in the Senate and House of Representatives, in committee hearings and in lobbies, as a bogy man which rendered a mere thought of protection to the oil industry impossible from the standpoint of the politicians. Neither Democratic nor Republican party men would stand for a tariff on crude and refined oil. Some of the men in Congress from oil States did come forward as advocates of such a tariff. Committees from the oil country, wholly inadequate and without any assistance from a properly organized publicity aid, came here and

(Continued on Page 219)

Peons laying pipe lines in Panuco district, Mexico
—Photo from Ewing Galloway, N. Y.



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NATURAL GAS DEVELOPMENTS

Natural Gas Supply Unlikely Much More Than Between 1916-20

Natural gas has been produced in the United States for about 60 years with almost continuous growth in quantity and value, but the industry has now probably reached its peak, for during the last six years there has been little increase in production and in two of these years there has been a decrease, says a survey just issued by R. S. McBride and E. G. Sievers of the Geological Survey.

No reliable figures are available to show either the quantity or the value of the natural gas produced annually prior to 1898, but rough estimates of the value of the gas as measured by the quantity of coal, wood, or other fuel which is had replaced indicate that in the period 1885 to 1987, inclusive, from $5,000,000 to $20,000,000 worth of gas was sold each year.

In 1898 the Geological Survey made its first canvass of the industry, but until 1906 only the value of the gas was reported. The increase in the value of the gas was continuous from year to year until 1920, when nearly $200,000,000 worth of gas was marketed. In 1921, however, the total value fell off by 11 per cent, and the quantity decreased by more than 17 per cent.

A single year's decline does not warrant the assumption that the industry has already passed its peak of production in both quantity and value, but the data at hand in regard to the gas still available underground and its relation to municipal centers or industrial markets make it probable that the annual output will never be very much more than it was during the period 1916-1920. It is likely, however, that the average value of the gas will increase more rapidly than the sales will decrease, so that the total value will more than hold its own.

More than 2,600,000 domestic consumers and about 21,000 industrial or commercial consumers use natural gas as fuel. To supply these consumers there is produced annually in the United States about 700,000,000 M cubic feet of gas, which is more than half of all the gaseous fuel used for heat, light, and power in the country.

In 1920 the market value of the gas used was nearly $200,000,000, but in 1921, because of decrease in production, it was only $175,000,000. About $250,000,000 worth of manufactured gas has been used annually in the United States during recent years, but the unit value per M cubic feet of manufactured gas is much higher than that of natural gas.

Between 30 and 40 per cent of the natural gas consumed in the United States is used by domestic consumers; the remainder is used for industrial operations of various sorts. There is at present a strong tendency to curtail industrial consumption in order to conserve gas for domestic users. This tendency has resulted in a marked increase during recent years in the percentage of gas used for domestic purposes, and there is no doubt that both economic conditions and official regulations will continue to further this change. In some States the regulations of public-utility commissions prohibit the use of industrial gas during some seasons of the year, and certain applications are prohibited by law at all times.

PHILADELPHIA CO. DIVIDEND

Philadelphia Co. has declared regular quarterly dividend of $1 on the common stock, payable October 31 to stock of record October 1.

TEXAS CITIES LOSE READY TO SERVE SUIT

SHERMAN, Texas, Oct. 1.—Judge C. P. Pierman of Gainesville, sitting as special judge in the Fifteenth District Court has refused to continue temporary injunction which he had granted several weeks ago against the Municipal Gas Co. cutting off patrons at Denison who might refuse to pay the company's ready-to-serve charge.

Judge Pierman refused to hold the Cox Law, under which the State Railway Commission is given regulatory powers in fixing public utility rates in Texas, unconstitutional as counsel for 21 Texas cities interested in the case contended. The right of the gas company to collect a ready-to-serve charge has been approved by the State Railway Commission, but the powers of this body in regulating rates under the Cox bill was attacked as being unconstitutional by Hamp P. Abney, counsel for the cities, on the grounds that the duties of the Railway Commission are fixed by the Constitution, and these duties may not be changed by legislative enactment.

Mr. Abney said his next step will be an appeal to the Court of Civil Appeals at Dallas.

The Municipal Gas Co. was required under Judge Pierman's ruling to furnish bond of $10,000, protecting Denison gas users from ready-to-serve charge should a higher court reserve the ruling made by Judge Pierman and declare the law under which the charge is made unconstitutional.

CANADIAN GAS OPERATIONS

CHATHAM, Ont., Oct. 1.—In the Ontario fields, the Union Natural Gas Co.'s No. 248, a deep test on the old Truckenbrod farm, near Port Alma, Kent County, has spudded in. The Glenwood Natural Gas Co.'s test on the Hugh Shanks farm near Port Alma is drilling below the gas production in the Tilbury sand for a deep test of the Trenton limestone. In Lambton County, Coste Oil & Gas Co.'s No. 4, Dawn Township, is continuing as a test of the Trenton formation. Coste No. 5, Moore Township, is drilling.

The Union Natural Gas Co. has notified the village of Port Lambton that the gas supply will be discontinued after October 11.

OKLAHOMA NATURAL VALUATION DELAYED

OKLAHOMA CITY, Oct. 1.—Gas consumers of Oklahoma need not expect action this winter on the increased rates allowed the Oklahoma Natural Gas Co. by the decisions of the Federal District Court and the State Supreme Court last spring. Henry Willmering, chief accountant for the State Corporation Commission, said the commission would be doing well to finish by February 1, 1924, the valuation of the Oklahoma Natural's property on which it is now engaged.

As indicating the vast amount of detail involved in the work now being done, the commission has been furnished figures showing every purchase of gas made by the company during 1922 and the first four months of 1923. There are tens of thousands of entries. The commission is now checking these with the gross production tax department of the State auditor's office to discover whether the various producers paid the tax.

It had been thought when the survey was undertaken that it could be finished in six months. It has proved a bigger task than anticipated. Whether it will accomplish anything will be largely for the United States Supreme Court to say. If the courts hold, as some think, it will from its recent decision in the Missouri telephone case, that production cost alone is to be considered, the Oklahoma Natural may be able to prevent much of a reduction in rates.

CENTRAL STATES BUYS EL DORADO CONTROL

SHREVEPORT, La., Oct. 1.—Announcement is made from El Dorado that a controlling interest in the El Dorado Gas Co. has been secured by the Central States Gas and Electric Co., a $2,500,000 corporation of which W. A. Busch, of St. Louis, is president. W. A. Robinson, who was secretary of the El Dorado Gas Co., has been elected vice president of the new concern and will have charge of its activities in El Dorado.

It is reported that the company will soon commence construction of a 16 to 20-inch pipe line from El Dorado to the Monroe gas fields and that it has secured control of minor companies organized originally for the purpose of supplying three cities with gas, and will ultimately extend its lines to Little Rock.

RAINS DELAY GAS LINE

SHREVEPORT, La., Oct. 1.—Heavy rains have retarded considerably the construction of the Louisiana Gas & Fuel Co.'s pipe line from wells in Webster Parish to Shreveport but it is expected that completion will be accomplished in accordance with the contract, approximately December 1. The line is a 12 and 8-inch main and will provide complete protection for Shreveport's gas supply inasmuch as recent completions of gas wells in that area show wells with better than 35,000,000 feet initial production.

REFUGIO WELL CLOSED

AUSTIN, Texas, Oct. 1.—The Railroad Commission advised that the large Pratt-Hewit gas well near Refugio was being brought under subjection and would be closed. This well ran wild and its owners declared the pressure was too great to control it, but the sides began to cave in and reduce the flow. Its maximum flow was estimated at between 150,000,000 and 200,000,000 feet of gas per day. The commission had ordered it closed.

WITHDRAWS CHICKASHA BID

OKLAHOMA CITY, Okla., Oct. 1.—Ralph Day of Oklahoma City announces he has withdrawn his application for a natural gas franchise in Chickasha, after he learned that the Chickasha Gas & Electric Co. had contracted for gas in the Grady County Field and failing to get sufficient promise of support of industries to warrant the expenditure. Pipe for the line to the field has been ordered by the Chickasha company and steps have been taken to secure a right of way.

KAY COUNTY GAS PROTEST

A protest has been filed by the Kay County Gas Co. (Marland) of Ponca City, Okla., with the state corporation commission against the cut in price being charged for gas in Ponca City and Newkirk. Recently the commission approved a cut of 5 to 10 cents effective October 1.

UNION NATURAL GAS DIVIDEND

Union Natural Gas Co. has declared regular quarterly dividend of 2 per cent on the outstanding capital stock, payable October 15 to stock of record September 29.

PLANNING BETTER USE OF MONROE, LA., GAS

MONROE, La., Oct. 1.—Heavily increased production of gas in the Monroe area has stimulated investigation of the possibilities presented by much greater utilization of the potentialities of the field. It is suggested that the Alexandria line be continued on to New Orleans and two other routes have been surveyed through which towns in Mississippi and Louisiana would be served. The New Orleans line would be 294 miles long and would take care of Baton Rouge. One of the other surveys would be 311 miles long and would serve towns in both States, and another 275 miles would permit service to a greater number of communities in Louisiana than in Mississippi.

Possible State control of the gas fields is being discussed, wth a view to making this valuable natural resources serve to attract an almost unlimited number of industrial plants, many of which find this fuel the cheapest and most efficient possibly obtainable for their particular needs. Some idea of the productiveness of the Monroe gas area may be gleaned from the fact that since September 1 completions reported from Ouachita and Morehouse parishes aggregate over 135,000,000 feet initial capacity. It is likely that much greater utilization of this fuel for other than carbon producing purposes will soon take place.

A charter has been secured for the Chester Carbon Co. with a capitalization of $250,000, organized under the laws of Louisiana, and with offices at Monroe. The concern will produce casinghead gasoline as well as carbon and has acquired several thousand acres of gas producing area which will be thoroughly developed along with the building of their plant and pipe lines to supply it.

The following officers will have charge of the affairs of the company and also constitute the first board of directors: Percy P. Learned, President; G. W. Booze, Vice-president and L. B. Adams, Secretary and Treasurer.

NEW MEXICO CARBON PLANT

W. R. Childers and associates of Gallup, N. M., are reported organizing the New Mexico Oil & Refining Co. that will establish a plant at Aztec to manufacture gasoline and carbon black. The company is reported to have contracted for gas from two wells producing near Aztec. Machinery for the plant has been ordered. It is estimated that the gas will produce a gallon of gasoline to each 2,000 feet of gas.

KAY COUNTY GAS RATE

OKLAHOMA CITY, Okla., Oct. 1.—During a visit to Newkirk, Frank Carter, chairman of the Corporation Commission, told members of the Chamber of Commerce the commission soon would order a complete inventory and audit of the Kay County Gas Co. and promised if the figures justified it a reduction in gas rates would be made.

NORMAN RENEWS FRANCHISE

An overwhelming majority was voted in a special municipal election at Norman, Okla., for granting the Oklahoma Gas & Electric Co. a 25-year gas franchise and renewing the eelctric franchise for the same period.

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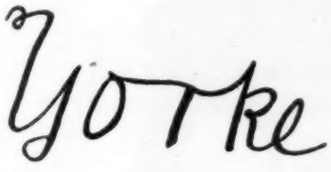
Hello, Central give us Number 5000000. We are going to talk to all the Producers of Oil and Gas in the world. "There they are, go ahead." This is



of Washington, Pa. Are you all there? "Yes." Well, what we wish to tell you is that our Derricks are made of Structural Steel —just the same as Eiffel Tower, in Paris, a thousand feet high, and can entertain 10,000 people in its restaurants and theaters, and 3,000 people per hour can be handled by its elevators. We don't bother with "Duplicates, Triplicates or Falsicates;" but if you need a Derrick that will sustain 1,000,000 pounds, just say the word and it is yours. Yes, we make our derricks out of the same material that the shipbuilder uses, the railroad builder uses, what whole cities are built from, what is used in transmission towers, what is used in cranes that hoist a locomotive the same as a block of wood. In a word, we use what all the rest of the constructors in the world are using. And when everything is said and done, there are just two classes of material from which derricks can be made—namely, wood and steel. All the rest have to be patched up.

Just here we are going to stake our whole reputation on two cards—we will depend on "drawing to our hand." There are two large gas companies who have 1,000 of our derricks between them. On request, we will furnish their names and you can write them, and if they do not state that they have been using our derricks for 14 years, and that some of the derricks have drilled close to a hundred wells and are still good, and if they do not state further, that these derricks can be erected and dismantled in one-half the time required for any other derrick in the world, we will quit right here; we will never write another ad in The Oil and Gas Journal." In a word, we will submerge into the dark waters of oblivion.

ASK

THE OHIO STRUCTURAL STEEL CO., Newton Falls, Ohio

FRICK & LINDSAY, Pittsburgh, Pa.

or C. T. HENTHORNE, Tulsa

EQUIPMENT AND SUPPLIES

CHAIN WRENCH UNDER CONTINUOUS STRAIN

A feature of the exhibit of the Trimo tools at the National Petroleum Exposition will be a No. 14 Trimo Chain Wrench under continuous strain during the entire week of the exhibit. This chain wrench has several superior features of design and construction as the result of suggestions made by experienced operators in the Mid-Continent oil fields to the special representative of the Trimont Manufacturing Co. during the past several month. The Trimo Chain Wrench is made up of a handle piece of the best drop forged steel shaped into I-beam form, giving greater strength. The jaws of the finest steel carry the strain from the pipe directly from the heel of the jaw to a shoulder on the handle stock. The chain is anchored in the handle stock at the side of and below the jaws and locks in a special safety pocket on the opposite side, thus doing away with any danger from locking between the jaw plates. The chain is fastened to the handle stock by a standard thread bolt, making replacement easy. A feature of the chain is that by means of a special link on either end, the chain, in case of a break, can be changed to the other link at once. Most breaks in chains occur in the first or second link nearest the handle and valuable time is saved in field work by this quick interchange. Because of the bar construction of the handle the greatest strength is obtained with the least weight. The entire make-up of the tool is considered for heavy and rapid work. It is not necessary to remove the tool to turn pipe in opposite direction; simply place the jaws on the opposite side of the pipe.

The Trimont Manufacturing Co. will also exhibit many advanced features in their other tools, the result of valuable suggestions made from practical men in the oil fields. The well known Trimo Pipe Wrench is now issued with a heavier frame in the 18-inch size and larger. The Trimo Pipe Cutter now has a frame of a superior drop-forged steel, making a very rigid neck.

Trimo tools will be shown at the Petroleum Exposition at Booth G-16 which is situated directly opposite to the main entrance of Convention Hall.

The exhibit will be in charge of Mr. H. H. Wotherspoon, (Trimo Bill), who has spent all the past year in the Mid-Continent oil fields to meet the requirements of the field men.

NEW METER TO CHECK DELIVERIES AS MADE

After three years of experimental work the Associated Supply Co. is offering the Granberg Meter to refiners and distributors. The use of it, it is said, gives an absolute check on the amount of deliveries by the employees besides assuring the customer full measurement.

The Granberg meter is made in 1", 1½", 2", 3" and 4" sizes, the 1½" meter being designed primarily for installation on the rear of trucks delivering gasoline, and other refined oils. The meter measures the flow in gallons by gravity as being delivered to the quantity buying customer.

There are but three moving parts exclusive of the counter. Every drop of liquid is measured by displacement in compartments subject to direct and permanent adjustment. There is no by-pass or changing of gear ratios. The main castings are made of a special bronze alloy. The valve and guide are of an aluminum alloy. All other parts are die cast or machined from special metals known to withstand the action subjected to. Parts of the same pipe size are interchangeable in the event of accidents. Casting, machine and lathe work is accomplished with latest improved machinery.

The registering mechanism consists of two dials and gear train. One dial contains a totalizing counter moving one digit per gallon of liquid delivered. The other dial has a revolving hand on a graduated plate which makes one revolution per gallon delivered. The Granberg meter is being used on docks for delivery to power boats, also in refineries and distributing stations.

NEW MICHIGAN OFFICES

After October 1 the Michigan office of the Truscon Steel Co. will be located in its new building at 615 Wayne St., Detroit, Mich., occupying the entire second floor. The office includes a complete service organization and engineering department. This office will furnish complete information, estimates and details on all Truscon Steel Products, including Reinforcing Steel, Metal Lath, Steel Windows, Steel Joists, Highway Reinforcement, Standard Buildings, Inserts, Foundry Flasks, Platforms and Pressed Steel Parts. The general Advertising Department of the Truscon Steel Co. will also be located on the same floor with the Michigan office.

TUBULAR GOODS ARE STRONGEST; STEEL PRICES BEING MAINTAINED

By B. E. V. Luty

PITTSBURGH, Pa., Oct. 1.—The steel market, as a whole, continues very dull, being in almost stagnant condition. Of the different classes of steel products, tubular goods are probably the strongest.

While the steel market has been more or less dull, as to actual buying, since last April, it seems to be in a somewhat new period now, in that a fresh or increased feeling of conservatism suddenly possessed steel buyers recently. This new spell in the steel market seems to date from September 10 or 15. It has found more or less of a counterpart in other commodities, coal for instance, and some observers are inclined to the view that business in general has been affected by some psychological influence. This might be due to the wide advertising "the business cycle" has lately received, whereby men conclude that by this time they should begin preparing for less favorable conditions, even though the physical or financial causes that have produced the business depressions of the past are wholly lacking at the present time. In other words, it has been suggested that business may worry itself sick when it has no physical ailment. In the case of steel in particular, however, there is explanation of the recent increase in conservatism in that there must be disappointment that the increase in steel activity so generally predicted for September has plainly failed to put in an appearance.

No Prospect of Lower Prices

With new business running below shipments for several months, more steel mills get into the position of being able to make very prompt shipment on new orders, while the railroads are making quick deliveries and thus steel buyers do not need to carry so large stocks. Also, as there is practically no chance of prices advancing in the near future, and there is always chance of their declining, jobbers and manufacturing consumers have no incentive to buy ahead.

There is no actual prospect of lower steel prices during the remainder of the year, since mills realize there is usually more business to be had by maintaining prices than by starting reductions, but if one or two mills should start cutting others would probably follow as a matter of competition.

Market prices for finished steel products, including shapes, plates, bars, wire, nails, tubular goods, sheets and tin plate, remain quotable at the old level, reached when advances ceased in April. Pig iron prices declined rather sharply in May and June, but have declined little since then, while in the past few weeks they have been practically stationary. Many furnaces have blown out rather than try to force sales by cutting prices further. The furnaces have fairly large stocks.

Connellsville coke has declined farther in the week, and iron and steel scrap prices have softened somewhat.

Production of steel, as a whole, decreased about 15 per cent from May 1 to September 1, but during September the decrease has probably been at a slightly greater rate. Production has been determined simply by the amount of steel jobbers, builders and manufacturers would take, whether on old contracts or by making fresh purchases. The amount of mere contract business mills have on books has little to do with it.

Oil Country Goods

Demand for oil country tubular goods has been decreasing somewhat more rapidly in the past two or three weeks than during the summer. Demand for full weight or merchant pipe is heavy, and greater shipments would be taken if they could be furnished. Pipe mills are running practically at capacity and are doing better in this respect than almost any other class of finishing mills.

Tin plate is now pretty well sold up for fourth quarter. The $5.50 price has been very well maintained.

There is practically no demand for oil storage tanks, and plates for any purpose are very quiet. Many mills can make practically immediate shipment on new orders. The market price is 2.50c, Pittsburgh basis, but Chicago has a separate basis of 2.60c.

WHY USE EXPLOSIVES? JUST ROLL 'EM OUT

This novel idea was developed in the engineering department of the Reed Roller Bit Co. in cooperating with a perplexed driller who had collapsed casing at the bottom of a 4,000-foot hole. The plan consists of making up a tandem of graduated size Reed Reamers in which the cutting rollers were replaced with smooth surface rollers and a pilot on the lower end.

While many jobs have been done successfully with this arrangement, the picture shows the largest assembly yet used for the purpose. In this case seven reamers are in the make-up, the largest being 19¾-inch reamer and tapering down to a 5½-inch reamer. The picture was taken on a North Texas rig.

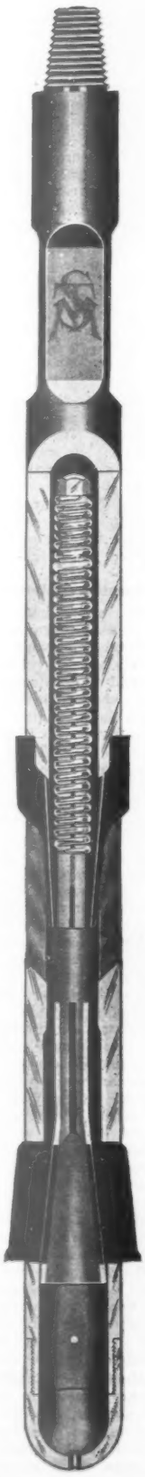
The tandem is lowered into the casing and rotated; if casing is not entirely demolished the operation will roll it out in normal diameter and save the risk of losing the hole through use of explosives.

ORDERS FOR COMPRESSORS

The Ohio Fuel Gas Co. has placed orders for about 1500 H. P. of Miller gas engine driven compressors for four new gas boosting plants to be completed this fall in Eastern Ohio for supplying gas to various Ohio cities.

INTERNATIONAL PETROLEUM EXPOSITION AND CONGRESS TULSA, OKLA. OCT. 8-14

Underreamer Troubles Eliminated



THE Standard Underreamer embodies the ultimate achievement in underreamer construction which provides a more thoroughly **fool-proof tool** than any other manufacturer has been able to produce.

We make no idle statement when we say **you cannot lose the cutters** in the hole, as they are inserted through the inside of the body and cannot be removed except by taking the tool apart on the derrick floor. **You cannot pull the internal working parts out of the body and leave them in the hole** when reaming tight or cavy formations, as the cutters move in and out on a horizontal plane and are not suspended by a tee or crossbar.

The Safety Bowl on the bottom of the tool absolutely precludes any possibility of mudding up, and also acts as a guide ahead by keeping the underreamer in the center of the hole.

The Standard Underreamer costs no more in the beginning and is far cheaper in the long run as the work each part is called upon to do causes no undue strain at any one point and the result is almost a wear-proof tool.

Notice sectional view of the **Standard Underreamer** on the left. See if you cannot easily discern some of its superior features. Write for folder that fully describes this underreamer and its advantages.

Standard Machine & Tool Co.

BRISTOW, OKLA.

Getting Safety to "Belong" to a Force

Cosden Engineer Explains to National Safety Council at Buffalo Meeting Methods that Bring Results to Policy

By Elmo D. Murphey
Safety Engineer, Cosden & Co., Tulsa

Address before Petroleum Section at the Twelfth Annual Safety Congress of the National Safety Council held at Statler Hotel, Buffalo, N. Y., October 2-5

Recently we heard of a conversation that a staff officer had with an employe about safety work. The workman's expression of appreciation of the work compared to that of previous administrations led the officer to ask just where there was a difference and why people were so willing to cooperate with the safety man. The workman replied in a sort of surprised voice, indicating that the reason was very evident:

"Why, it's because he 'belongs' around here, he has made safety a part of us."

I have thought about that answer many times and have asked myself: "Do my methods warrant such a statement from the men in my own field?" I trust they do, for such has been my purpose.

Why of Safety Work

Why do we find organized safety work in industry? Is it not because the owners and executives understand that every industry is two-fold in nature; the material and the human? If the human phase is neglected, their business will suffer in terms of profit. Realizing that it is a good business principle to give this phase consideration they plant the safety policy, with confidence of a harvest of increased production, lowered costs, good will, stability.

The real mission of a safety department is to cultivate and bring about a growth from this planting so that it shall bring forth the fruits expected.

The safety man must keep in touch with all new ideas, methods and information. That is why some 3,000 of us are gathered here in Buffalo.

For the purpose of this paper we are assuming that the safety department head is a line officer responsible to a staff officer, with authority to supervise all safety matters in the organization. First, let us consider the relation of the safety man to the department heads or sub-heads, or as they will hereafter be termed "The Foreman."

The Foreman

Get acquainted with the foreman! If we are to get safety work to "belong" to the foreman, to be a part of him as much as the habits of eating and drinking, we must learn his viewpoint, his problems, his relation to the rest of the institution; the family and community influences which affect his disposition and attitude. Then we can shape our plans to suit.

We should take into consideration the essential things expected of every foreman, viz:

1. To improve shop or department morale,
2. Increase production, and
3. Decrease costs.

We should shape our methods to help him in obtaining these results.

The foreman should understand the relation of accident prevention to production and costs. He must be shown how accidents run up costs through lost time, increased labor turn-over and the general effect on department production often noticeable after a workman is injured.

If a foreman should be of foreign birth and rearing he must be educated in American ideals and industrial methods, particularly in the spirit of safety.

Every foreman should be kept in touch with new developments in the safety realm pertinent to his department.

Feeling of Jealousy

Frequently a feeling of jealousy towards safety on the part of a foreman has to be overcome because he fears it "may show him up." If his men know he has this attitude they will hesitate to report bad conditions for fear of "getting in bad" with the boss. Such a condition calls for careful and patient handling. To eradicate this fear of criticism we should try to make the right appeal to the very thing that is its basis: his pride. Persuade him in the wisdom of eliminating unsafe practices or conditions which may cause criticism. Reach him through the instinct of leadership. Show him that the safety program cannot fully succeed without his cooperation. Demonstrate to him how he may gain from cooperation in increased production and lowered costs. Soon he will court constructive criticism.

The methods used with the foreman must be so formulated that the workmen will not get the idea that the safety department dominates their leader and thus injure the foreman's pride and the morale of his department. Never dictate to him. "Laying down the law" is generally disastrous. Safety, to accomplish its end with the foreman, as well as the men, must become a controlling motive rather than a set of rules and edicts.

Men will put forth greater efforts if the competitive spirit is appealed to. Keep the foreman's accident record before him, show what other departments have accomplished, lead him out to try to excell.

Often foremen who appear indifferent, the so-called "hard boiled" foremen, can be appealed to through their emotions. You all know about the Detroit police judge who has compelled traffic offenders to view the remains of their victims at the morgue. In some cases it takes such a measure to get a man to wake up to his duty to eliminate needless suffering; needless suffering of the injured and the hardships placed on the family. After a serious accident get the indifferent foreman to accompany you and the injured man to the hospital and afterwards visit the man's family. If he is not a convert before that, he will be afterwards!

The Workmen

We have heard a great deal in safety gatherings and literature of the need of "securing the backing of the management." My conception of this is that the safety man need not worry about the backing of the management if he makes good with the workmen. They produce the profitable results expected. The management gave it's backing when they planted the safety policy. It is up to the safety man to do the forwarding, if you please.

We must have the confidence of the workmen. This is the largest group with which the safety man deals and potent in possibilities. Can the safety man make good with the workmen and get their confidence so they will say of his work that it has made safety "belong" if he has a superior air? His attitude must be such that no distinction is visible.

Men react favorably to a genuine interest in them. It causes them to feel that they are more than a cog in the machine. The safety man who knows the workman, who has acquainted himself with the problems they meet in doing their daily stint, as well as the influences surrounding their lives, will have many loyal allies. Maintaining a close touch with the workmen means the battle half won.

Through personal contact with the workmen we may have a fruitful source of first-hand information as well as affording an avenue of dispensing information on safety practices and methods. Boyd Fisher has said: "Safety instruction has to be specific and personal—it has to be talked." Politicians know the value of personal contact in their campaigns. After the campaign is over they may cease to kiss the babies or to ask Hiram how his corn crop is coming along. The safety man must always be on the alert to elect the safety ticket—his campaign is never over.

The workman is the big customer, the big depositor of safety. The modern bank cashier's office is not hidden at the back of the banking rooms and behind a door marked "private," but is out in the main banking room, easy of access to every customer. We cannot afford to lose contact with any workman.

Safety Representatives

We have found it profitable to have departments in the plant elect from one to three workmen safety representatives. These men report direct to the safety man any unsafe practices or conditions anywhere in the plant. Each man is expected not only to be on the alert for such items, but to keep in touch with the workmen in his department and secure like information from them. These men are elected for a term of six months and cannot succeed themselves. They make written reports and the safety department head is the only man who knows the source of any item. We have found this confidential feature is sometimes an important consideration in dealing with certain reports.

Through this safety representative system we discover the men who are alert and vitally interested in safety. We cultivate that part of the field very carefully. Our experience with this plan has demonstrated that the best way to corral a man's interest in a thing is to give him a definite responsibility for it's success.

Our plant safety committee of mixed membership, foremen and workmen, meets once a month at the company cafeteria during the lunch hour. The members meet in a room shut off from the main dining room and transact the business of the committee between 12:20 and 12:55 o'clock, after lunch is eaten. There are five regular members and to each meeting we invite a couple of workmen from one of the mechanical departments, and the same number from one of the operating departments. These are selected from a different department each meeting. Thus in the course of a year we give a large number of the workmen an insight into the work of the committee.

Educational Methods

One of the most important means which may be used to get safety to "belong" is through the educational methods. Accidents are more likely to occur to inexperienced or uninformed men than to older men who are better acquainted with the working conditions. Safety educational work has an important bearing on the end to be achieved. When we deal with men who are illiterate or of foreign birth and training, the need for educational work to overcome these obstacles in the path of accident prevention is even more pressing. These men must become acquainted with American standards, language, and the spirit of the safety idea. Safety instruction given to new men must be driven home by repetition until they really know it. Sometimes in order to convert men to certain safety ideals it is necessary to demonstrate the safe ways in actual practice.

The good to be gained from posting bulletins giving safety ideas should not be underestimated, particularly the frequent use of "home-made bulletins." We believe these should be used as often as possible in connection with the excellent bulletins issued by the National Safety Council and others. Illustrations of local conditions and practices on safety catch a man's interest as a photograph of his wife or a personal mention in the society column stirs up sudden and unusual interest in the paper.

We should not overlook the good that may be accomplished in spreading the safety idea by way of the eye-gate; by means of the moving picture, warning signs and the like. The National Safety Council has recognized the importance of this means of propagation, and has been very active in producing and making available some very good safety films.

Instincts and Emotions

Safety makes appeals to the workmen through certain instincts and emotions. Consider the instinct of self-preservation, often described as the primary instinct. Most every man clings to and loves his life, has a prompting to protect it at

(Continued on Page 180)

ESSENTIALS OF SUCCESSFUL SAFETY WORK

Among the points emphasized by Mr. Murphey in his address at the twelfth annual Safety Congress in Buffalo this week were the following:

The safety man must keep in touch with all new ideas, methods and information.

Get acquainted with the foreman. Learn his viewpoint, his problems, his relation to the rest of the institution and the influences which affect his disposition and attitude.

The safety man need not fear about securing the backing of the management if he makes good with the workmen.

Personal contact with the workmen is one of the most important features of successful safety work.

One of the most important means which may be used to get safety to "belong" is through educational methods. In this connection, "home-made" bulletins have been found to give good results.

Safety makes appeals to workmen through certain instincts and emotions.

Disciplinary measures should be used as a last resort only. Few men expand under compulsion but most persons turn to a leader who commands respect. Leaders of men in industry should be just and impartial before they are generous.

TITUSVILLE TWIN CYLINDER Drilling Engines

Titusville Equipment Includes:

Rotary Machines
Draw Works
Swivels
Twin Cylinder Engines
Slush Pumps
Oil Field Boilers
Crown Blocks
J. C. and Olin Gas Engines

The most advanced type of driving unit for operating drilling equipment yet designed. There is superabundance of evenly maintained power, a feature that makes for maximum efficiency in every drilling operation, particularly when long lengths of drill pipe are being used.

The construction is extremely rugged, every refinement of finish and flexibility of operation has been secured.

A new descriptive bulletin is yours for the asking

THE TITUSVILLE IRON WORKS COMPANY
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Sold in Domestic Fields by
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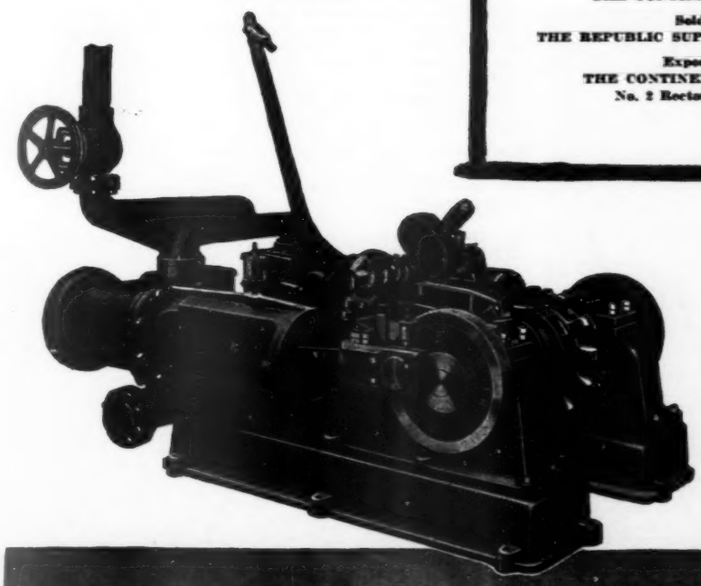


TITUSVILLE OIL COUNTRY
MACHINERY
BUILT WITH RESERVE RUGGEDNESS

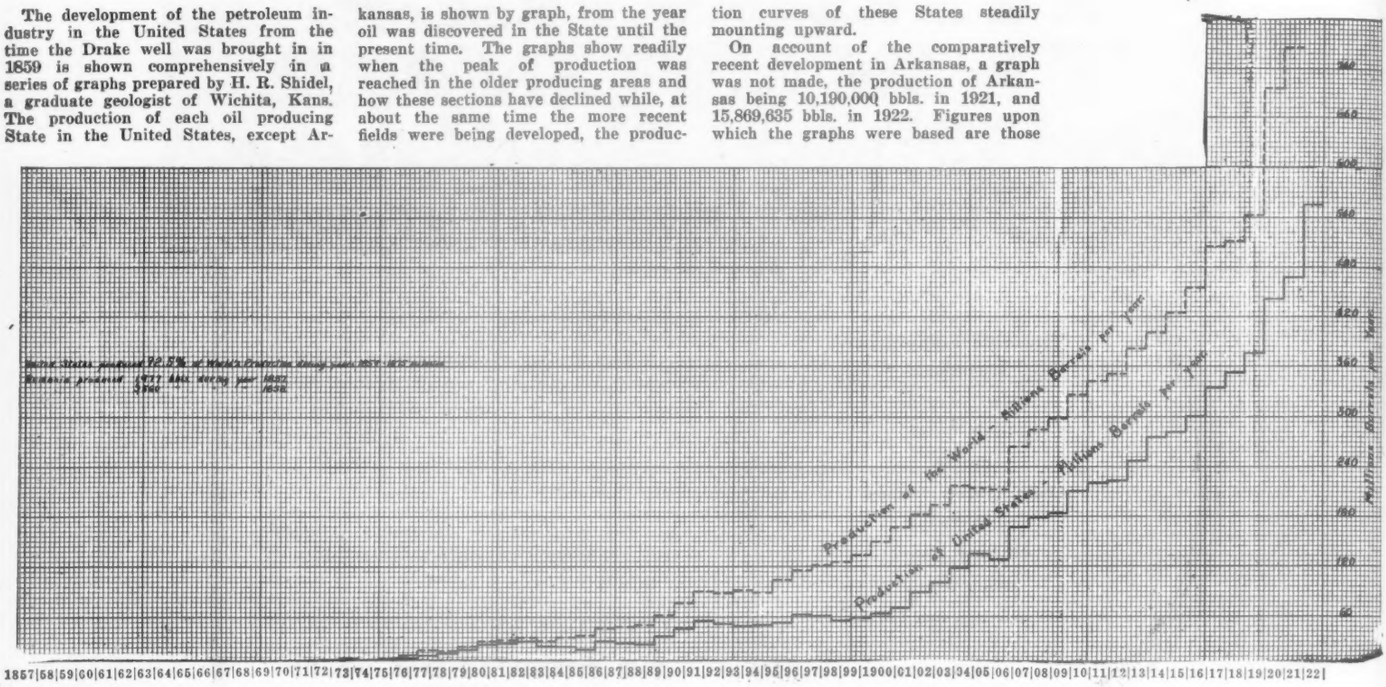
The TITUSVILLE IRON WORKS Co.
TITUSVILLE - - PA.

Graphs Show Development of Industry

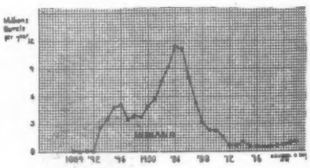
Production Curves Give Comprehensive Idea of Output of Oil in Each State. New Fields can be Traced.

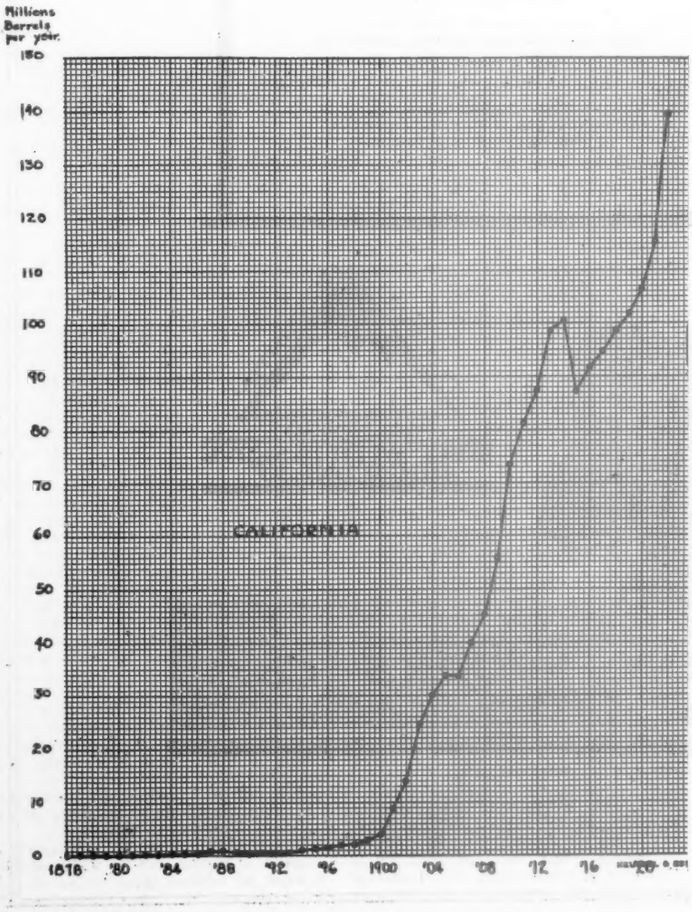
The development of the petroleum industry in the United States from the time the Drake well was brought in in 1859 is shown comprehensively in a series of graphs prepared by H. R. Shidel, a graduate geologist of Wichita, Kans. The production of each oil producing State in the United States, except Arkansas, is shown by graph, from the year oil was discovered in the State until the present time. The graphs show readily when the peak of production was reached in the older producing areas and how these sections have declined while, at about the same time the more recent fields were being developed, the production curves of these States steadily mounting upward.

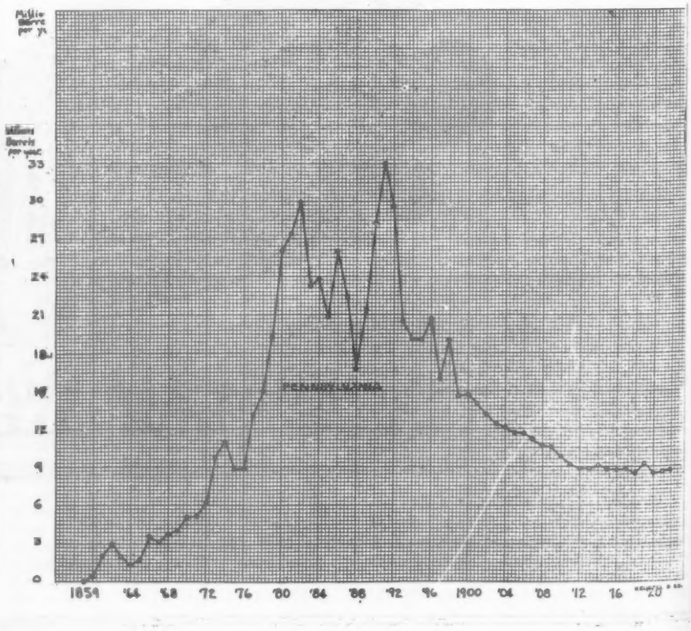
On account of the comparatively recent development in Arkansas, a graph was not made, the production of Arkansas being 10,190,000 bbls. in 1921, and 15,869,635 bbls. in 1922. Figures upon which the graphs were based are those prepared by the United States Geological Survey.



The rapid rise in production in many of the States during certain brief periods can be traced to the discovery of large oil fields at the time. This is shown by the vast increase in output in Kansas in 1916-1917 when the El Dorado Field was opened. Similarly, the development of other big fields in various parts of the United States is shown on the graphs by the increase in production of those States during these periods. The graphs, which are part of a series prepared by Mr. Shidel, follow:

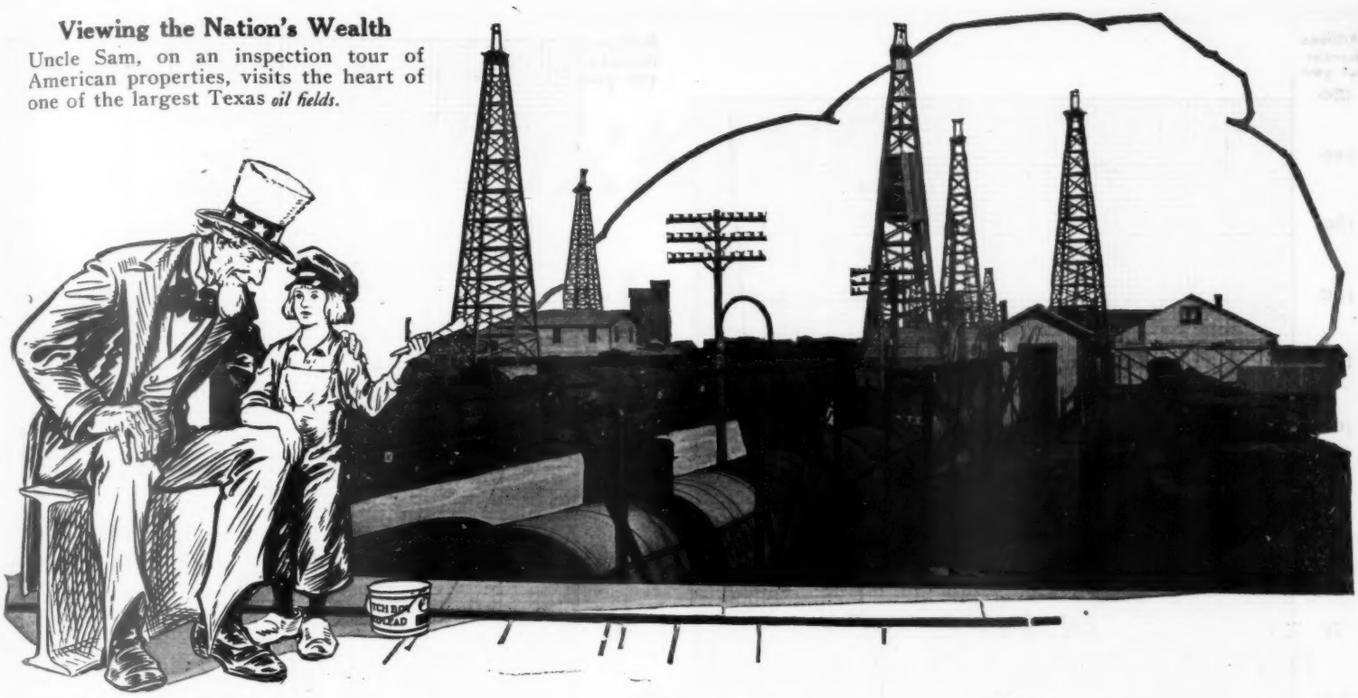






Viewing the Nation's Wealth

Uncle Sam, on an inspection tour of American properties, visits the heart of one of the largest Texas *oil fields.*



The Dutch Boy Painter:

"Here you see steel in the tank cars and pipe lines holding the crude oil that the nation needs. But that steel won't hold oil very long unless good paint protects it against the invasions of rust."

Do your tank cars carry anything besides oil?

A NEWLY completed tank car, of course, carries nothing but oil. But if it is unprotected by paint, it will soon be transporting something you did not intend to handle. That extra item is rust, an expensive extra cargo. Red-lead will adequately protect your tank cars against rust.

Red-lead has been for years the standard covering for metal. It prevents air and moisture from forming the rust spots that weaken the metal in tank cars, pipe lines, and refineries, and endanger the thousands of dollars invested in them.

Dutch Boy red-lead-in-oil gives to metal this positive protection against corrosion. It puts around clean metal a tough, elastic covering of pure red-lead that the weather can not pierce. It is easy to apply and has unusual spreading power. Experienced paint users are continually surprised to find they have Dutch Boy red-lead paint left over after having estimated their needs according to usual rules.

You can obtain Dutch Boy red-lead in both paste and liquid form. The *liquid* comes as straight, untinted red-lead for first coats and also tinted to blacks, browns, and greens for finishing coats. The untinted *paste* can be tinted to any dark color.

Keep your oil equipment covered with Dutch Boy red lead-in-oil. If the present film is broken, scrape the metal thoroughly and apply Dutch Boy red-lead before rust spots can spread.

Write for Painting Helps No. 9.

Litharge

We also make litharge of the correct physical character and chemical purity for oil refining. You can rely on its unvarying uniformity at all times.

Our nearest warehouse can give you quick shipments.

"Save the surface and you save all"—Paint & Varnish

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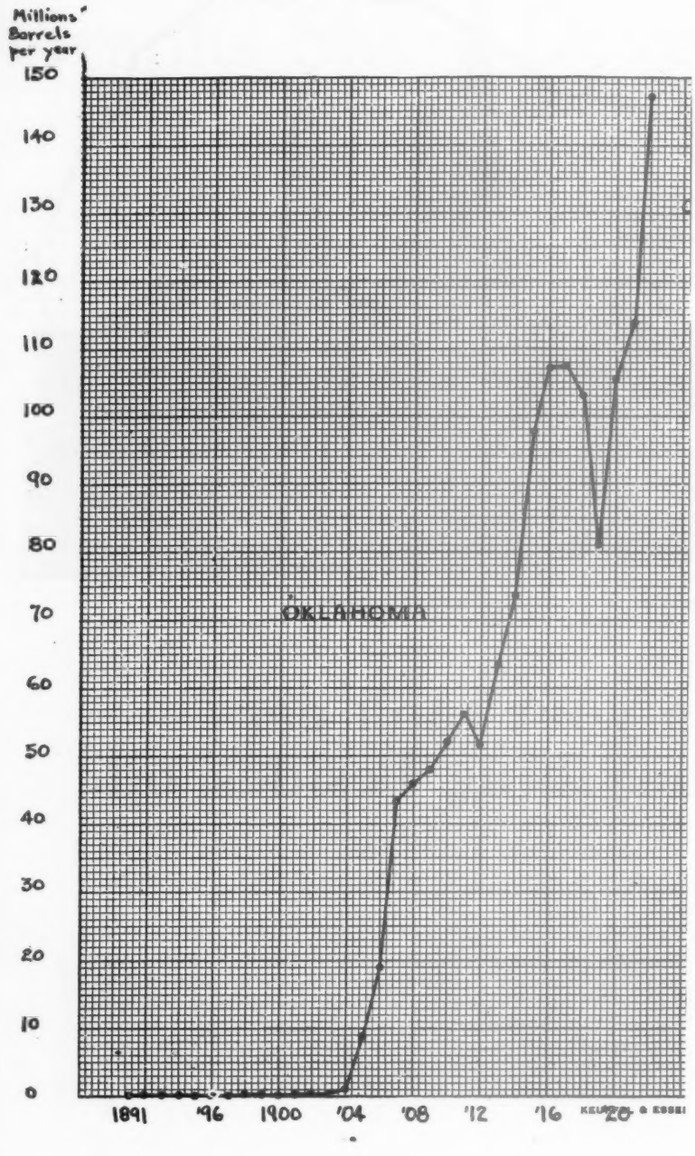
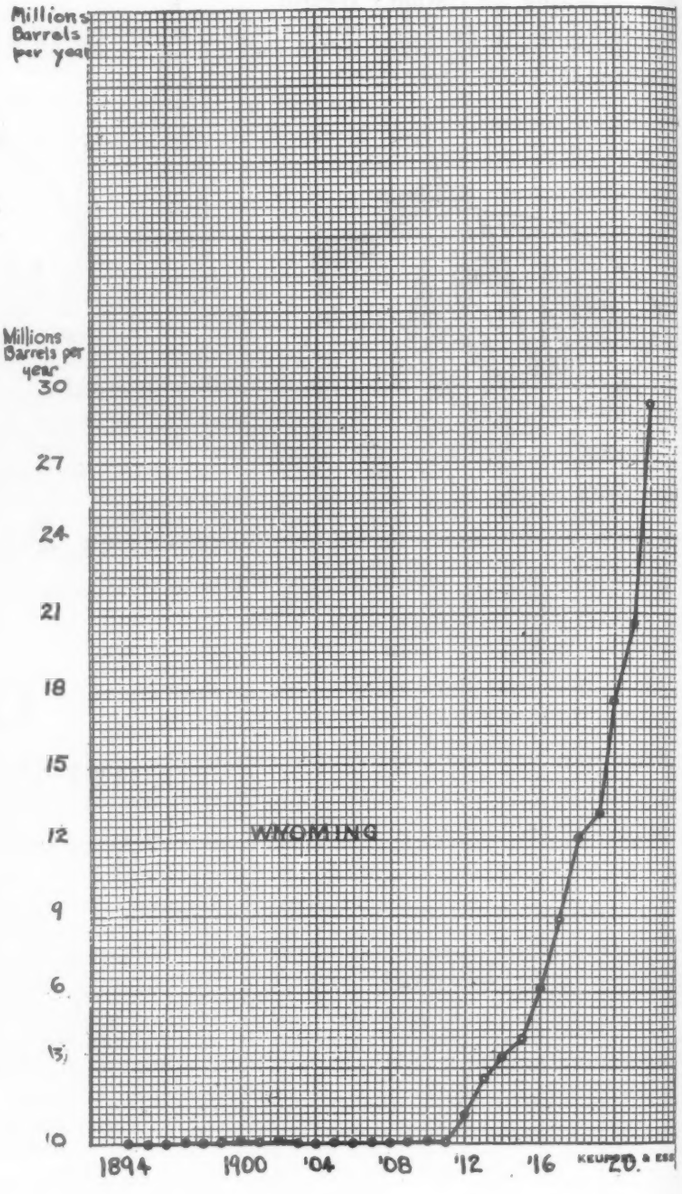
New York, 111 Broadway; Boston, 131 State St.; Buffalo, 116 Oak St.; Chicago, 900 West 18th St.; Cincinnati, 659 Freeman Ave.; Cleveland, 820 West Superior Ave.; St. Louis, 722 Chestnut St.; San Francisco, 485 California St.; Pittsburgh, National Lead & Oil Co. of Pa., 316 Fourth Ave.; Philadelphia, John T. Lewis & Bros. Co.; 437 Chestnut St.

Dutch Boy Red-Lead


Millions Barrels per year
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
OKLAHOMA
1891
'96
1900
'04
'08
'12
'16


Millions Barrels per year
Millions Barrels per year
30
27
24
21
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3
0
WYOMING
1894
1900
'04
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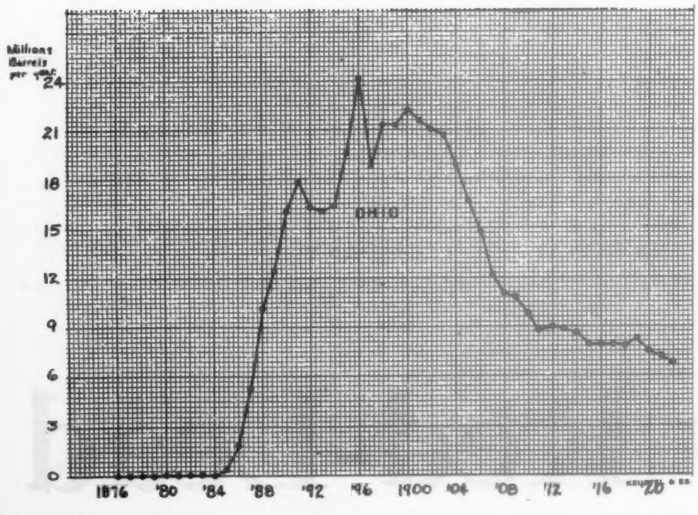
Millions Barrels per year
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21
18
15
12
9
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OHIO
1876
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'88
'92
'96
1900
'04
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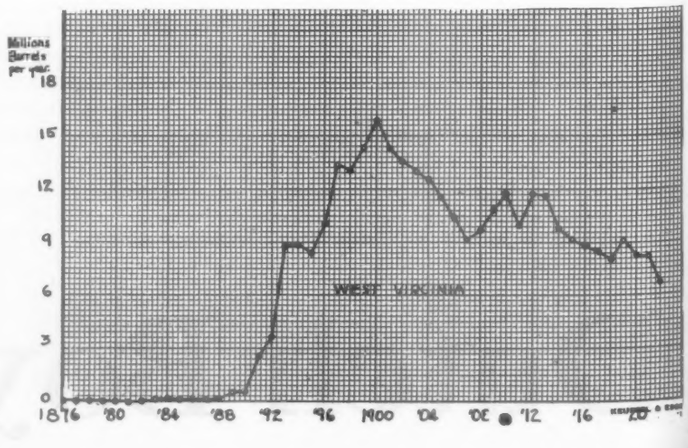
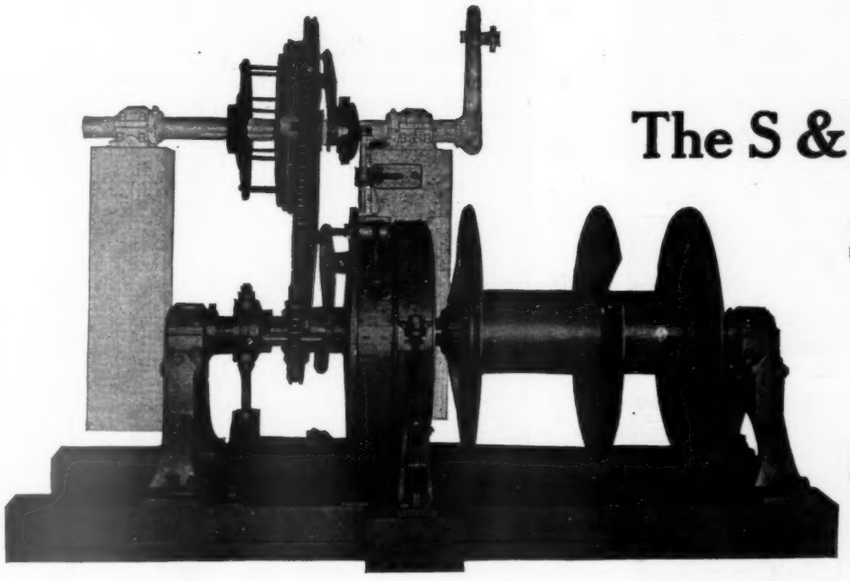
'12
'16


Millions Barrels per year
18
15
12
9
6
3
0
WEST VIRGINIA
1876
'80
'84
'88
'92
'96
1900
'04
'08
'12
'16

SEE it *WORKING* at the EXPO!

INTERNATIONAL PETROLEUM EXPOSITION AND CONGRESS TULSA, OKLA. OCT. 8-14



The S & B Chain Driven Sand Reel

with its

two-finger Control

SAVES TIME, and

—many times a cavey formation has been passed through, with little more than passing notice from the Driller equipped with an S. & B. Chain Driven Sand Reel, while

—on the next location, the Drillers, not so fortunately equipped, had considerable trouble, perhaps for several days, with this same cavey formation.

Sold through Supply Companies Only

Ask Us for A List of Users

Licensed Manufacturers

THE OIL COUNTRY SPECIALTIES MFG. CO.

COFFEYVILLE, KANSAS

DETACH HERE, FILL IN AND MAIL COUPON

J-4

The O. C. S. Mfg. Co.

Coffeyville, Kans.

Gentlemen: Please send me bulletin describing the S. & B. Chain Driven Sand Reel.

Name_____

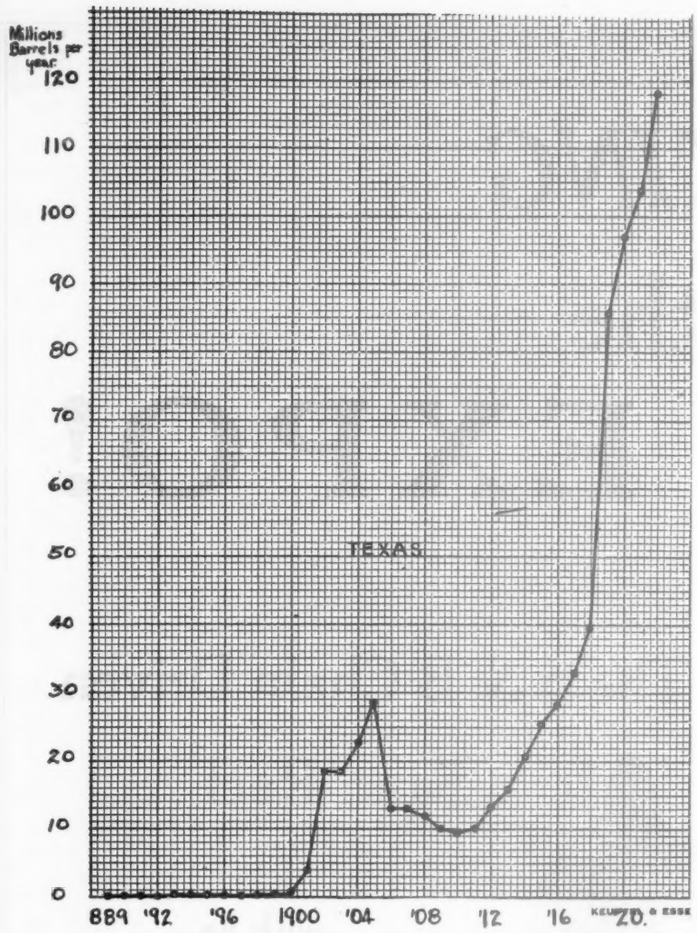
Position_____

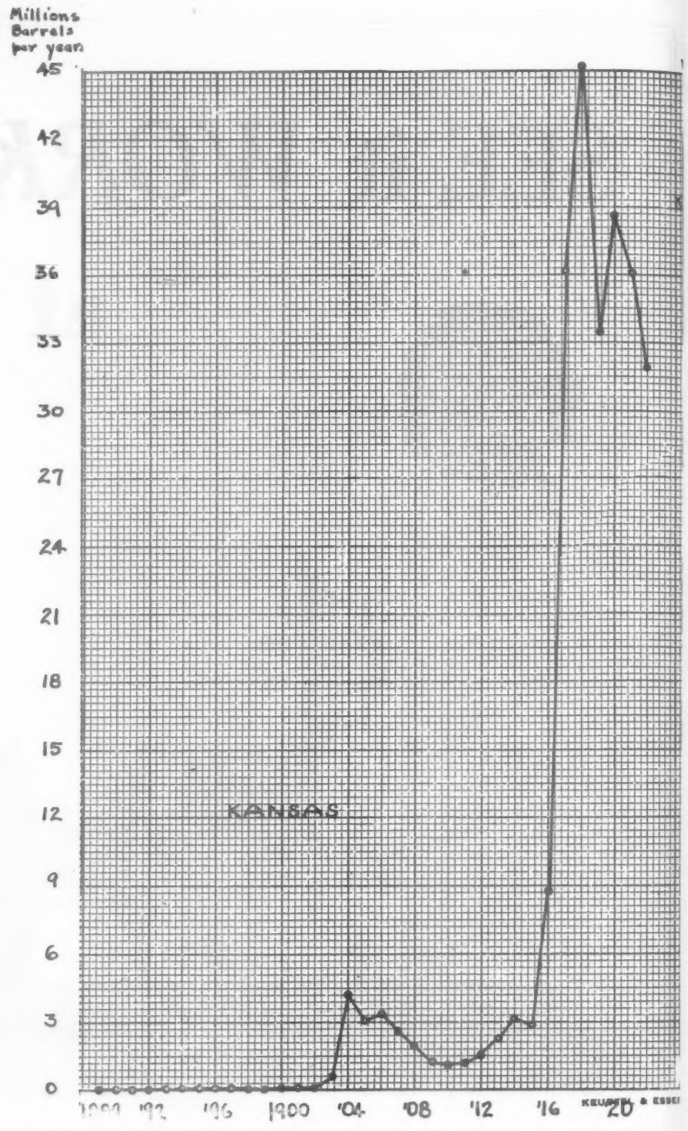
Company_____

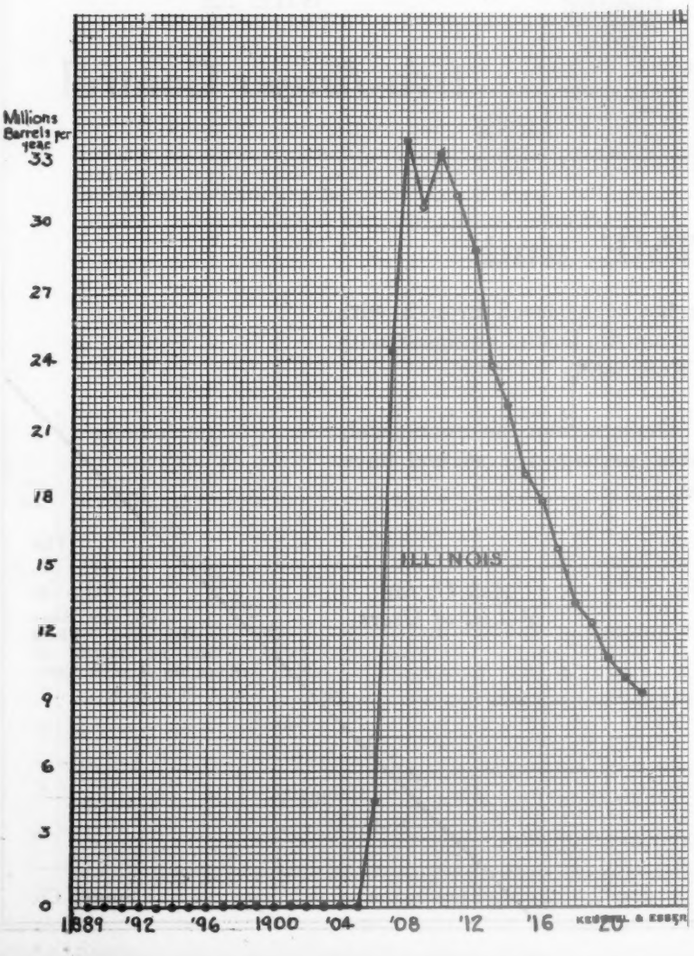
Address_____

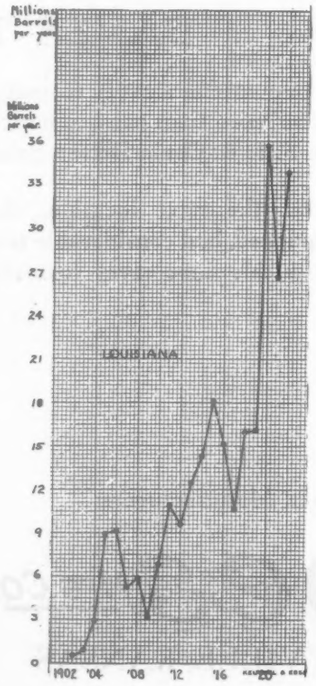
_____

I prefer the_____Supply Co.









DRILLING IN MINNESOTA

ROCHESTER, Minn., Oct. 1.—Much commotion was caused at the oil well being drilled on Bigelow's hill east of the city when traces of oil were found on the bailings. A distinct trace of fluid other than water could be seen on the surface the pail of muck, it was said.

Tom Jones, in charge of operations, declined to make a positive statement regarding the possibilities evidenced by the scum on the water. "There is a little layer of some fluid on the surface of the water, but this may be due to the shale oil coming from the brown and green shale through which we are going at the present time. I am not ready to say what it is."

OIL WORK IN ALSACE

PARIS, Sept. 18.—The Pechelbronn Co. netted 4,469,000 francs in 1922, permitting an 8 per cent dividend. This company was formed in March, 1921, with a capital of 45,000,000 francs, to exploit a 100,000-acre oil concession in Alsace, north of Strasburg, worked by the Germans since 1889. In 1922 a total of 70,110 tons of oil was produced. Refineries were equipped with a modern plant and handled 73,860 tons of crude oil. In all, 115 wells were drilled in 1922, with considerable success, and contracts were signed for further work in Galicia and Spain.

See Norris Bros., at Tulsa

Will Exhibit a Full Line of Oil Well Pumping Equipment

You can find the solution to your pumping problems in Booth B-18—International Petroleum Exposition and Congress at Tulsa.

A full line of Oil Well Pumping Equipment will be on exhibit there for your examination. Over thirty years spent in direct contact with Lease Superintendents, Foremen and Workers has enabled us to manufacture a complete line which we gladly guarantee to give longer and more satisfactory service than any other.

Being specialists in Oil Well Pumping Equipment, we would welcome the opportunity to talk over your pumping problems.

Our booth is prominently located. No doubt you will pass near it many times while wandering around the convention. Make a note of its location NOW and let us relieve you of your pumping worries.

NORRIS BROS., INC.
Manufacturers of Oil Well Pumping Equipment
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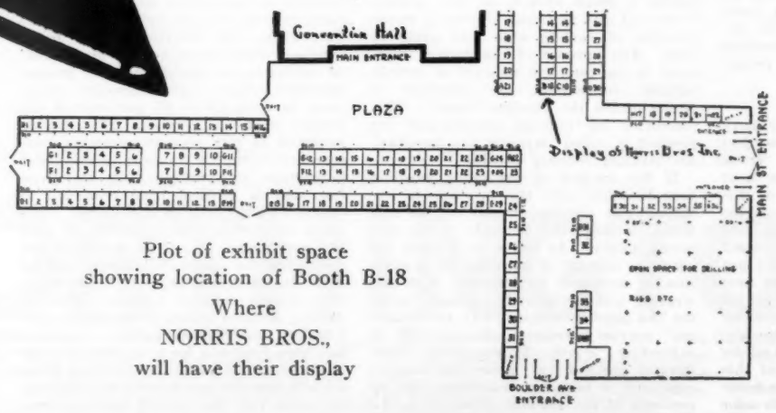


Plot of exhibit space
showing location of Booth B-18
Where
NORRIS BROS.,
will have their display

How Motorists Obtain Their Gasoline

By T. A. Boyd
Chief Fuel Section General Motors Research Corporation in "American Motorist."

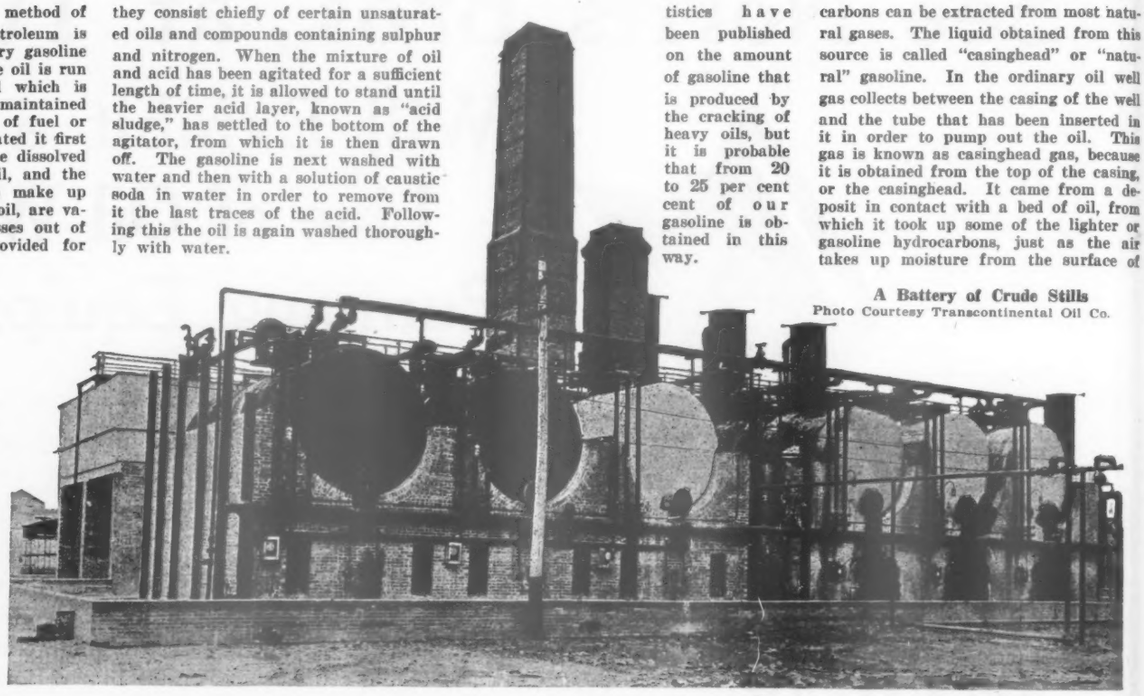
A simple and widely used method of obtaining gasoline from petroleum is known as the "straight-refinery gasoline process. In this process crude oil is run into a large cylindrical still which is then slowly heated by a fire maintained underneath, either by means of fuel or coal. As the petroleum is heated it first gives off any gas that may be dissolved in it. Soon it begins to boil, and the gasoline hydrocarbons, which make up the lower boiling part of the oil, are vaporized first. The vapor passes out of the still through a pipe provided for the purpose, and is condensed in a suitable condenser. As its lighter constituents are distilled out, the temperature of the boiling oil gradually rises. The liquid coming from the condenser is collected until the material suitable for making gasoline has been distilled from the crude oil. The receiver is then changed and the higher boiling materials, such as the kerosene and gas oil fractions, are successively separated in the same way.

Imagine a Ford car lifted to the height of ten miles by the energy of one gallon of gasoline.

If you could apply all the energy of a single gallon of gasoline you could drive a 2,500-pound car on a level paved road over 300 miles at a rate of 20 miles per hour.

Only 70 per cent of the gasoline taken into the carburetor of the average car is actually burned.

Improper carburetor adjustments cost motorists large sums annually.



A Battery of Crude Stills
Photo Courtesy Transcontinental Oil Co.

The vapor from the still is condensed by passing it through many feet of pipe cooled by running water. On its way to the receiving tank, after condensation in the condenser, the distillate is run through what is known as the "receiving house" or "tail house." Here the stream of condensed distillate runs behind the glass window of a "look box," through which its size and something of its color may be noted. At frequent intervals the stillman or the man in charge of the receiving house takes a sample of the distillate, and from the results of his examination of the sample he decides when the stream should be diverted to a different receiving tank. Convenient to the look box in the receiving house are valves for directing the stream of distillate to the proper receiving tank.

Crude Benzine

The product obtained in the primary distillation that has just been described is generally called in the refinery "crude naphtha" or crude benzine." The next succeeding process in the refining of this material is usually a chemical one, for which the "crude benzine" is run into a large lead-lined agitator. A small percentage of sulphuric acid is then put into the agitator, and the oil and acid are thoroughly mixed by blowing air through the bottom of the agitator, by mechanical stirring, or by counter-current circulation of the oil and acid by means of a pump. The purpose of this treatment is to remove undesirable materials from the oil and to improve its color and odor. These undesirable materials are those which cause gasoline to give unsatisfactory operation in service, and they consist chiefly of certain unsaturated oils and compounds containing sulphur and nitrogen. When the mixture of oil and acid has been agitated for a sufficient length of time, it is allowed to stand until the heavier acid layer, known as "acid sludge," has settled to the bottom of the agitator, from which it is then drawn off. The gasoline is next washed with water and then with a solution of caustic soda in water in order to remove from it the last traces of the acid. Following this the oil is again washed thoroughly with water.

This washed naphtha is then given a final distillation in which the heating medium is either steam or a direct fire. If steam is employed, it is either passed through the liquid in the still in a system of closed pipes or it is admitted directly to the liquid in the still, and, passing over along with the gasoline vapor, is condensed in the condensers. When it is admitted directly to the liquid temperature at which the oil distills is lowered, and when it is used in a system of closed pipes the oil is vaporized without coming into contact with highly heated still walls, such as result from direct firing. Steam is employed in the final distillation of gasoline in order that the product may be of good color and free from undesirable oils. Because closer fractionation, and therefore a more uniform product, can be made without the use of steam, the tendency in some refineries is to abandon steam stills in favor of directly fired stills.

Finally, the product of this second distillation is generally "sweetened" with "doctor." This treatment consists in adding a small amount of free sulphur to the oil and agitating it with a water solution of caustic soda and oxide of lead. The purpose of the doctor treatment is the complete removal of certain sulphur compounds, the presence of which makes the gasoline "sour." This completes the refining process and the product is called "straight run gasoline" or "straight refinery gasoline."

If the method of producing gasoline just described were the only one in use the amount obtained would not be sufficient to meet the demands of the motoring public. In order to furnish an adequate amount of gasoline the production is increased by blending with the straight run or straight refinery product the gasoline obtained (1) by "cracking" heavier petroleum oils, and (2) by extracting liquid hydrocarbons from natural gas. From these two sources combined is obtained something like 30 per cent of the gasoline produced in the United States. About 475,000,000 gallons of gasoline is now extracted annually from natural gas. Few reliable statistics have been published on the amount of gasoline that is produced by the cracking of heavy oils, but it is probable that from 20 to 25 per cent cent of our gasoline is obtained in this way.

When a high boiling petroleum oil is heated above 700 degrees Fahrenheit a change or readjustment in its composition occurs with the formation of some lower and some higher boiling hydrocarbons. So, if a material like a gas oil or a fuel oil is heated under proper conditions, an oil is obtained that approximates petroleum in composition; that is, it is composed of a mixture of materials that boil over a wide range of temperatures from very low to very high. And, as in the case with petroleum, a whole series of fractions or cuts, including gasoline, can be obtained from this oil. The process of heating an oil in order to change its composition is called "cracking." The use of this term arose from the fact that heat splits up or cracks a large, high boiling hydrocarbon molecule with the formation of some smaller and therefore more volatile or lower boiling molecules, in much the same manner as a stone or a brick is broken.

Cracking Processes

In the most widely used cracking process gas oil or fuel oil is heated under pressure in large, thick-walled cylindrical stills to temperatures above 725 degrees Fahrenheit. By this treatment an oil is obtained which, when refined by a method similar to the straight refinery process described above, yields gasoline equivalent to from 25 to 35 per cent of the volume of gas oil cracked. The gasoline prepared in this way is somewhat "unsaturated;" that is, it contains a smaller percentage of hydrogen than the gasoline that is distilled from crude oil at comparatively low temperatures. Because of certain characteristics of such an unsaturated oil, it is generally not used alone for motor fuel, but is blended with the saturated gasoline produced in the straight refinery process. The resulting mixture makes a thoroughly satisfactory fuel for automobiles. Gasoline has been produced for a number of years in American refineries by cracking heavier oils, and this has prevented a shortage of motor fuel that would have occurred if no cracking of heavy oils had been done.

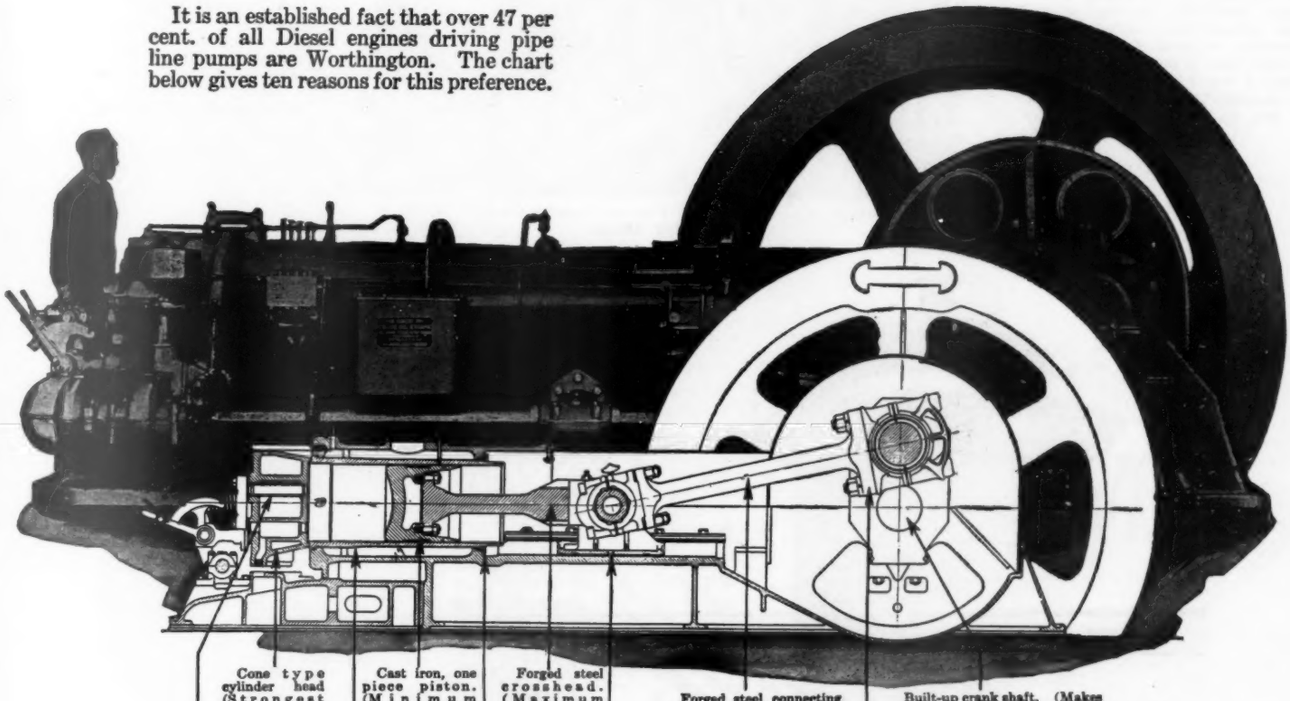
A certain amount of gasoline hydrocarbons can be extracted from most natural gases. The liquid obtained from this source is called "casinghead" or "natural" gasoline. In the ordinary oil well gas collects between the casing of the well and the tube that has been inserted in it in order to pump out the oil. This gas is known as casinghead gas, because it is obtained from the top of the casing, or the casinghead. It came from a deposit in contact with a bed of oil, from which it took up some of the lighter or gasoline hydrocarbons, just as the air takes up moisture from the surface of water with which it comes in contact. It is therefore called a "wet" gas.

Casinghead gasoline is obtained either by compressing and refrigerating natural gas or by passing it through a suitable heavy oil which absorbs the desired material. In the compression process the gas is compressed and simultaneously cooled by refrigeration. As a result of this treatment the natural gasoline separates from gas in a liquid condition (just as moisture separates from the air when it comes in contact with a cold object, such as a glass of ice water in summer), and is drawn off from the bottom of the chamber. The process is generally used for the extraction of natural gasoline from "rich" gases—a rich gas being one that contains a relatively high percentage of gasoline hydrocarbons. The natural gases treated for the recovery of casinghead gasoline yield anywhere from as low as one pint to as high as four or five gallons of liquid material per 1,000 feet. In the absorption process, the gas is brought into intimate contact with a large volume of heavy petroleum oil which absorbs the gasoline hydrocarbons that it contains. The absorbed material is then distilled out of the solvent oil, and is condensed in suitable condensers, thus yielding natural gasoline as a very volatile oil. The absorption process can be used for treating any natural gas, but it is particularly suitable for treating "lean" gases, or those which contain only a small percentage of gasoline hydrocarbons.

The production of natural gasoline is limited, but it forms a very valuable addition to our gasoline supply. It is too volatile to be used alone as fuel for automobile engines. The boiling point of the material is so low, in fact, that sometimes in summer it would actually boil in the fuel tank and fuel lines of the automobile. Some natural gasoline is so volatile that, if a small bottle of the liquid be held in the hand, it will begin to boil on account of the heat received from the hand. This difficulty is overcome in practice by blending natural gasoline with a considerably larger amount of the gasoline obtained in the

TEN REASONS FOR THE Oil Field Popularity of the Worthington Snow Engine

It is an established fact that over 47 per cent. of all Diesel engines driving pipe line pumps are Worthington. The chart below gives ten reasons for this preference.


Cone type cylinder head (Strongest design).
Cast iron, one piece piston. (Minimum weight, best transfer of heat.)
Forged steel crosshead. (Maximum strength and flexibility.)
Forged steel connecting rod. (Maximum strength —minimum weight.)
Built-up crank shaft. (Makes possible more uniform and higher grade forgings.
Spray valve encased in separate tube. (Can be removed without draining off circulating water).
Hard iron cylinder liner. (Long life.)
Liner stuffing-box. (Allows taking up jacket leaks without pulling liner.)
Adjustable crosshead shoe. (Adjustment made with laminated shims.)
Cast steel connecting rod boxes and main bearing shells. (Boxes and shells machined all over and lined with high-grade babbitt metal.)

WORTHINGTON PUMP AND MACHINERY CORPORATION

Executive Offices: 115 Broadway, New York City. Branch Offices in 24 Large Cities W-206.8

WORTHINGTON

Deane Works, *Holyoke, Mass.*
Blake & Knowles Works *East Cambridge, Mass.*
Worthington Works *Harrison, N. J.*
Laidlaw Works, *Cincinnati, Ohio.*
Hazleton Works, *Hazleton, Pa.*
Gas Engine Works, *Cudahy, Wis.*
Power & Mining Works *Cudahy, Wis.*
Snow-Holly Works *Buffalo, N. Y.*
Epping-Carpenter, *Pittsburgh, Pa.*

ordinary method of petroleum refining. The addition of a small percentage of this light or low boiling material to a motor gasoline is of great value, because it imparts to the gasoline with which it is blended a greater volatility and a lower initial boiling point. A high volatility or low initial boiling point characterizes a gasoline of good starting and operating qualities, and is especially desirable in winter.

Quality of Gasoline

As has been outlined above, the major part of our supply of gasoline is prepared by distilling out the lighter or lower boiling portion of crude oil. So, in a sense, gasoline is the essence of petroleum. In France, as a matter of fact, gasoline is called essence, and in England it is called petrol.

Since petroleum contains a long series of constituents from very low-boiling ones to very high-boiling ones, the temperature of the oil in the still gradually rises as its lighter or lower-boiling constituents are distilled out. The separation between the gasoline (lower-boiling) and the kerosene (higher-boiling) fractions is made simply by changing the receiver for the condensed distillate coming from the still. If the refiner wants to obtain a low-boiling gasoline, or one of narrow boiling range, such as "aviation" gasoline, he must change the receiver sooner than if he wants to obtain a gasoline of wider boiling range, such as the commercial motor gasoline of today. But, it is apparent that the sooner the receiver is changed the smaller the yield of gasoline will be. Although the refiner might want to make very volatile gasoline by "cutting" the gasoline fraction at a low temperature, the economics of the situation has prevented his doing so of late years, because the increase in the use of motor vehicles has been much more rapid than the increase in the production of petroleum.

In the early days of the automobile kerosene was the principal refinery product. The aim of refiners then was to get as much kerosene as possible, because there was a big demand for it at good prices. Gasoline, however, had little utility, and it was a by-product that was very difficult to dispose of. So the refiner "cut" the gasoline fraction and began to collect kerosene at just as low a boiling temperature as possible. The natural result of this striving after large yields of kerosene was that only the very low boiling part of petroleum was left in the gasoline and so, in those days, gasoline was a very volatile distillate. As a matter of fact, in order to prevent explosions of kerosene lamps, laws had to be passed regulating the amount of low boiling material that it was allowable to put into kerosene. These laws are still on the statute books in many States, and men are employed to inspect all kerosene to see that it contains no gasoline or low-boiling material. But now the big demand is for gasoline, and kerosene is more or less of an incidental product. (However, it is still necessary to produce a large amount of kerosene because even today a great deal more than half of the world is lighted with kerosene lamps.)

So, when the development of the automobile began, gasoline was a very volatile or low-boiling material. The fuel used by Butler in the tricycle he built in 1885, and which is said to have been the first vehicle to be propelled by an internal-combustion engine using a liquid fuel, was a light petroleum oil called "benzoline." This material corresponded closely to the very low-boiling distillate that the druggist sells under the name of petroleum ether. A similar fuel was probably used by Levassor, who is said to have built the first successful automobile about 1888. The gasoline on which Elwood Haynes ran his original "horseless carriage" in 1894 had very nearly the same volatility or boiling range as that which was first used abroad by early experimenters with motor vehicles. The very volatile petroleum distillate used in these engines was vaporized and mixed with the air necessary for combustion in devices known as surface carburetors. The air entering the engine was drawn over a surface of gasoline spread out in a thin layer of sufficient area to permit the formation of a proper explosive mixture of air and gasoline. Naturally such a means of vaporization necessitated a very volatile fuel.

As the number of automobiles in use increased the demand for motor fuel gradually became larger, until about 1905 there was no longer a sufficient supply of the early highly volatile gasoline to operate the motor vehicles in use. In order to meet the demand refiners found it necessary to include a larger percentage of the distillate from the crude oil in the gasoline fraction. This naturally decreased the volatility or increased the boiling range of gasoline; and so there has been a gradual widening of the boiling range of motor gasoline during the last 15 years. The amount of gasoline produced from a barrel of crude oil has risen from about 4 gallons in 1909 to 11 gallons in 1922. Not all of this increase has been obtained by widening the distillation range of gasoline, but a considerable part of it has resulted from the production of gasoline by cracking heavy oils.

The volatility of our present "aviation" or "high test" gasoline corresponds approximately to that of the "commercial" gasoline, or that sold to the public, in 1908. Its "initial," or lowest boiling temperature, is about 115 degrees and its "end point," or highest boiling temperature, is about 350 degrees (Fahrenheit.) The boiling range of commercial gasoline reached a maximum during the phenomenal demands of the summer in 1920, since which time the increase in the production of petroleum and in the use of cracking processes has enabled the distillation range of gasoline to be slightly lowered. The commercial motor gasoline of today has an initial boiling point of about 120 degrees and a final boiling point of about 435 degrees.

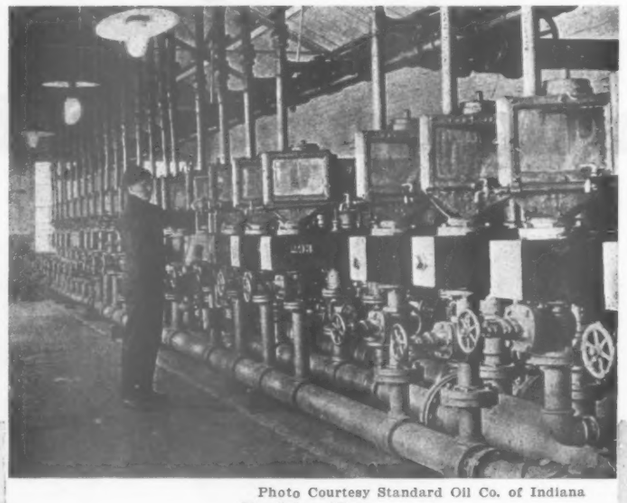
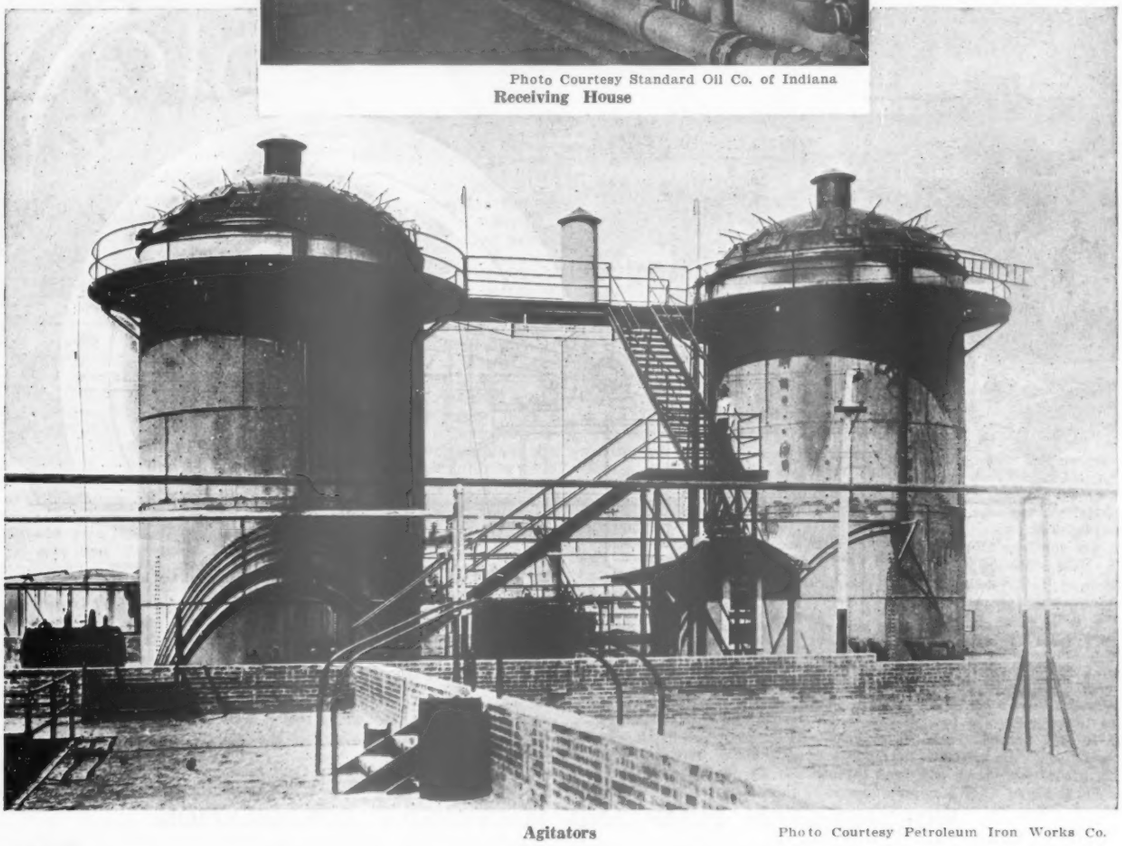


Photo Courtesy Standard Oil Co. of Indiana

Receiving House



Agitators Photo Courtesy Petroleum Iron Works Co.

Economical Utilization of Gasoline

A very small percentage of the energy in the gasoline consumed is actually utilized by your present day automobiles. There is enough energy in a gallon of gasoline, if it were completely utilized, to raise a Ford touring car a vertical distance of over 10 miles. This same amount of energy, if completely applied to pushing a 2,500-pound car along a level paved road, would drive it a dis-

SAFETY VALVES

On Tanks of the — COSDEN REFINERY

were installed by the

Petroleum Safety Appliance Company

because—

After experimenting for two years with valves of various designs and makes, Cosden refining experts found the **LIQUID SAFETY VALVE** the only valve efficient in every detail. Evaporation, Blowing Up of Tanks and Collapse by vacuum is entirely eliminated.

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Castle Building

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tance of about 300 miles at a speed of 20 miles per hour. But such a small percentage of this energy is actually converted to available power at the road that the average automobile runs only from 10 to 20 miles per gallon on good roads that have only slight grades.

One of the principal causes of low fuel economy is improper carburetor adjustment. An investigation was conducted in 1920 by the United States Bureau of Mines in order to determine the amount of unburned fuel that is present in the exhaust of the average automobile and truck engine as they are run by the public. The primary purpose of the investigation was to secure information that would serve as a guide in determining the amount of ventilation necessary for the Hudson River Vehicular Tunnel. A number of ordinary automobiles and trucks with their usual drivers were taken from the streets and operated under conditions of grade and speed approximately those that would prevail in the tunnel, and in the amount of incompletely burned fuel in the exhaust of each vehicle was measured. The results of this investigation showed that some cars are burning completely only half the gasoline they use up, and that the average automobile or truck engine in the hands of the ordinary driver is actually burning only 70 per cent of the fuel that is supplied to it. So that here is a 30 per cent loss due to improper carburetor adjustment and poor distribution to the cylinders of engines. This means that the average driver of a motor vehicle could reduce his gasoline bill to a marked degree, and that with very little, if any, sacrifice of performance, simply by adjusting the carburetor to supply a leaner fuel mixture to the engine.

There are, of course, many other factors that contribute to the small number of miles per gallon obtained with the average automobile. The most outstanding of these is the troublesome "pinking" in the engine that becomes apparent when accelerating from slow speeds or when laboring on hills in high gear, and which is generally known as the "knock." This knock, which is familiar to nearly everyone who has driven an automobile, does little or no damage to the present automobile engines. Its seriousness lies in the fact that its presence has prevented certain changes being made in the design of motor vehicles that would greatly increase the number of automobile miles per gallon.

But the American automobile industry is looking to the future and many engineers and chemists are bending every energy toward bettering the fuel economies of automobiles, without sacrificing the flexibility which the public demands, and which is so desirable. Pioneer work along any line is necessarily slow, and the industry is not yet 30 years old; but decided progress is being made toward increasing the efficiency of automotive engines, the results of which the public will some day realize on in the form of "more miles per gallon."

The National Automobile Chamber of Commerce says that average value of a passenger car is $750 and average value of a truck is $1,500. Allowing 3,400,000 passenger cars would give a value of $2,550,000,000 and 400,000 trucks a value of $600,000,000.

While the rapid increase in the value of all automobiles produced has been rising, the average value an automobile has been falling, due largely to decreased prices and to the rapid increase in the ownership of light cars.

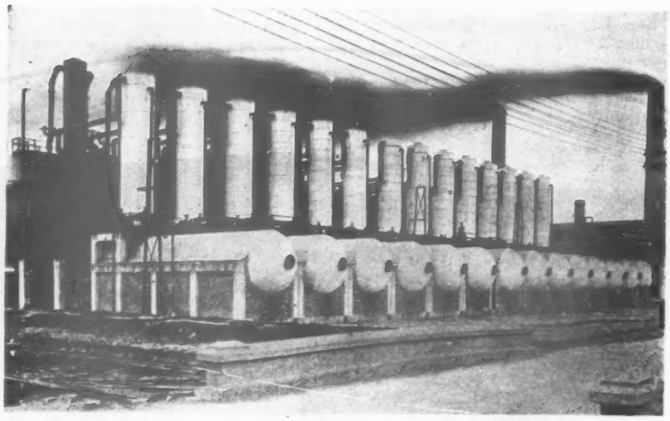
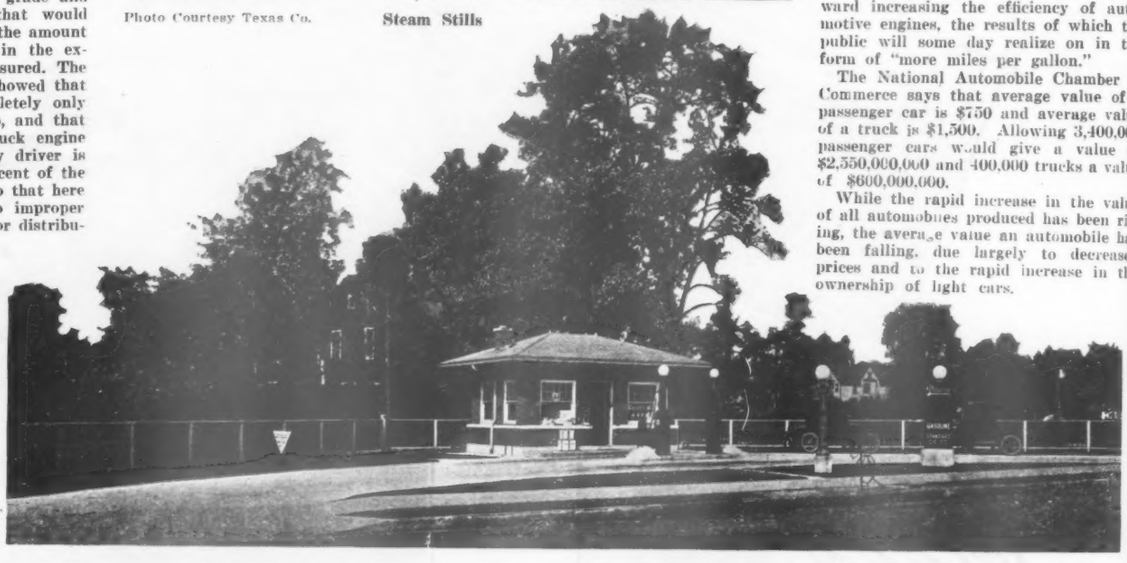


Photo Courtesy Texas Co. **Steam Stills**



N. LOUISIANA-ARKANSAS

(Continued from Page 40)

Bray-Hawthorne, Inc. have a fishing job at 972 feet in No. 1 Halford, Section 20-14-13, several miles north of production.

Clark, trustee is building derrick for No. 2 Berry, Section 24-15-17. The Gulf Refining Co. is down 1,890 feet in No. C-1 J. H. Dawson, Section 10-15-18, several miles west of production. Hall and others are down 2,280 feet in No. 1 Goodgame, Section 19-11-16, a number of miles north of production.

Frank Masters shut down No. 1 Bryant at 1,900 feet, Section 19-15-16, half a mile north and a little east of the Pioneer States Oil Co.'s producer.

The Pure Oil Co. is arranging to set 8-inch casing at 1,775 feet, total depth 1,799 feet, in No. 1 Malone Timber Co., Section 21-11-17, several miles north of production. Reilly and others have a fishing job at 2,070 feet in No. 1 Henry, Section 10-11-16, north of production.

Woods and associates are drilling at 2,625 feet in No. 1 Garnett, Section 2-12-18, several miles north and west of production.

Stephens Field

Two wells were put on the beam in this area last week, both making small pumpers. The Arkansas Invincible Oil Corp.'s No. A-2 Williams, Section 30-15-19, pumped 20 bbls. at 2,097 feet and in the same section the Mutual Oil Co. make a 25-bbl. pumper of No. 1 Grayson at 2,093 feet.

The Arkansas Invincible Oil Corp. is waiting on standard rig to pump No. A-1 Wesley at 2,185 feet, Section 7-15-19, and has rig up for No. 2. It is down 1,900 feet in No. 1 L. Jones, Section 30-15-19. Hopkins, trustee, is down 1,875 feet in No. 1 Allen, Section 33-14-19. The Mutual Oil Co. set 6-inch casing at 2,095 feet in No. 1 Hamilton, Section 19-15-19. The Shaffer Oil Co. set 6-inch casing at 1,986 feet in No. E-4 Brown, Section 18-15-19. The Standard Oil Co. has rig up for No. 1 L. Jones, Section 30-15-19.

Columbia County

No wells were completed in Columbia County last week and drilling activity has slowed down considerably. The Atlantic Oil Producing Co. junked the hole of No. 3 Milner at 1,578 feet and is moving over to start a new hole, Section 24-15-20.

E. T. Brown and associates are drilling at 2,595 feet in No. 1 Robinson, Section 23-18-23, 13 miles southwest of Magnolia.

De Soto and Hickman are drilling at 680 feet in No. 1 Fullenweider, Section 3-16-21. Dowby and others are down 2,000 feet in No. 1 Ray & Fullenweider, Section 12-17-22. The Gulf Refining Co. set 6-inch casing at 2,040 feet in No. 2 J. A. Hammond, Section 25-15-20.

Haskell and others have derrick up for No. 8 Webfer, Section 24-15-20. Hude & Aarens have rig up for No. 4 Adkins, Section 13-15-20. The Magnolia Petroleum Co. is drilling at 1,510 feet in No. 3 W. M. Webfer, Section 26-15-20 and has derrick up for No. 2 Hammond, Section 25-15-20.

The Ohio Oil Co. is down 2,560 feet in No. 1 J. W. Witt, Section 35-16-21. Turley & Tate are drilling at 50 feet in No. 3 Milner, Section 24-15-20.

Nevada County

Smitherman & McDonald completed No. A-1 Drake, Section 10-14-21, estimated making 8,000,000 feet of gas and 200 bbls. of clean oil at 1,190 feet.

Ames and others set 6-inch casing at 1,145 feet in No. 1 Waters, Section 10-14-21. Day, trustee is repairing boiler at 1,810 feet for No. 1 Westmoreland, Section 10-21-12.

The Dixie Oil Co.'s No. 1 P. R. Womack is standing 1,000 feet in fresh water at 1,200 feet, Section 10-14-21. Millie Dee, trustee is down 2,240 feet in No. 1 Stone, Section 36-13-20. The Prescott Oil Co. has set 10-inch casing and drilled to 330 feet in No. 1 Henry, Section 10-12-10. Wooten and associates shut down No. 1 Moore and Martin at 1,060 feet, Section 9-13-20.

Bellevue Field

Bossier Parish: Five producing wells were completed in the Bellevue Field last week, all in proven territory. In Section 15-19-11, the Humble Oil & Refining Co. completed No. 19 Roy, Bliss & Weatherbee, pumping 25 bbls. at 370 feet. The Louisiana Oil Refining Corp. completed No. D-9 fee, flowing 15 bbls. at 335 feet; No. D-10 fee, flowing 25 bbls. at 368 feet; No. D-17 fee, flowing 20 bbls. at 367 feet.

Olmstead and associates completed No. A-9 Strange, Section 23-19-11, flowing and pumping 250 bbls. of oil, 30 per cent salt water, at 302 feet.

The Humble Oil & Refining Co. is drilling at 65 feet in No. 18 Roy, Bliss & Weatherbee, Section 15-19-11. Bliss & Weatherbee set 6-inch casing at 372 feet in No. B-3 Bliss & Weatherbee, same section.

Olmstead and others are down 250 feet in No. A-10 Strange, Section 23-19-11. Peps and others set 8-inch casing and drilled to 175 feet in No. 1 Catlet, Section 27-19-11. Roy and others set 6-inch casing at 380 feet in No. 7 Scanland, Section 15-19-11.

The Standard Oil Co. set 6-inch casing and is bailing No. 6 Weaver at 392 feet, Section 14-19-11. Webb and associates set 8-inch casing at 180 feet in No. 1 Catlet, Section 27-19-11.

Red River Parish

The Coushatta Syndicate is drilling at 2,250 feet in No. 1 Marston, Section 13-12-10, 4 miles southeast of production in the old Red River Field.

The Fortuna Oil Co. set 10-inch casing and drilled to 1,460 feet in No. 58 Pugh, Section 7-12-10. The United States Drilling Co. is down 2,810 feet in No. 3 Fletcher, Section 10-12-10.

Claiborne Parish

In the proven territory of the Haynesville Field, the Gilliland Oil Co. put No. 1 J. R. Sherman on the beam, Section 26-23-8, pumping 75 bbls. at 2,840 feet.

Craig and associates struck salt water and abandoned No. 1 J. L. Garrett at 2,840 feet, Section 26-23-8, on the edge of production.

The El Dorado-Chief Oil Co. shut down No. 1 McKenzie at 3,343 feet for rig repairs. The test is in Section 35-22-7, 4 miles north of the Homer production.

The Fortuna Oil Co. is drilling at 2,850 feet in No. 1 Goree, Section 28-23-8. The Louisiana Oil Refining Corp. set 10-inch casing and drilled to 1,200 feet in No. 3 J. L. Garrett, Section 24-23-8.

The Ohio Oil Co. is down 2,585 feet in No. 1 Teague, Section 10-23-7. The Standard Oil Co. is going back into No. 3 Shaw Palmer at 1,755 feet to drill deeper, Section 30-21-7.

The Triangle Drilling Co. is down 1,400 feet in No. 1 Reinach, Section 17-22-5.

De Soto Parish

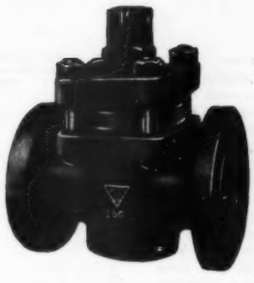
Pollock and associates are drilling at 1,710 feet in No. 1 Jenkins, Section 25-13-13. Snell & Kennebrew are down 2,135 feet in No. 1 Tompkies, Section 30-14-13.

The Texas & Pacific Coal & Oil Co.

(Continued on Page 174)

VALVES AND FITTINGS

The distinctive features of the construction of Reading Cast Steel Valves, the provisions made to keep them tight under varying line stresses, makes them particularly adapted for use in high temperature lines.



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DISTRIBUTORS SHOULD INFORM CONSUMERS

(Continued from Page 146)

A questionnaire brought in reports on 8,801 wells. All depletion charges, cost of carrying undeveloped leases and all other costs not directly connected with or allocable to the operation of the producing leases were eliminated in order to get as near as possible to the actual expense of lifting the oil and taking care of the leases and wells outside of flush production areas. The accompanying table shows the result of the investigation in detail.

The 8,801 wells produced 2,374,532.25 barrels gross, or 1,735 barrels per well per day, of which the operator received as his share 1,957,515.04 barrels at a total operating cost of $3,293,225.02 or $1.68 per barrel. This oil generally ranged in gravity from 28 degrees to 36 degrees and, therefore, brought on the market from $1.10 to $1.60 per barrel, or an average of $1.33 per barrel. If these figures be accepted as representative, there can be no doubt that the oil producer is losing money at present prices.

PRODUCTION COSTS DURING RECENT PERIODS (1923)
Cost of Producing Oil on Leases Which Average Four Barrels or Less Per Well Per Day

No. of Wells	Gross	Net	Gross per Well per Day, bbls.	Lifting	Overhead	General	Depreciation	Total	Cost per bbl.
	—PRODUCTION—			—EXPENSE—Operating Only—					
530	110,738.71	85,931.40	1.15	47,732.98	4,011.67	36,372.56	75,137.50	161,254.71	1.88
166	7,247.12	6,364.59	.2425	3,400.00	1,842.00	720.63	4,778.63	10,740.93	1.687
100	13,220.00	11,568.00	.7	5,799.98	2,560.60	2,860.70	8,000.00	19,221.28	1.66
510	37,097.00	32,786.00	2/5	14,579.64	10,178.40	7,081.56	6,347.88	38,187.48	1.16
32	2,441.00	2,441.00	13/32	1,148.18	.....	.....	2,240.00	3,284.18	1.35
52	32,240.63	28,210.55	1.70	15,545.96	3,264.65	.....	26,000.00	44,810.61	1.59
124	160,704.19	133,920.16	2.96	72,703.49	28,123.23	.....	62 000.00	162,826.72	1.22
1,159	377,698.81	317,942.45	2.1562	215,523.13	46,472.03	49,628.45	57,985.10	369,408.71	1.1619
2,201	166,630.00	150,525.00	.41	90,364.91	.....	25,125.00	102,660.80	218,150.71	1.45
105	36,107.79	14,939.89	1.95	29,398.43	.....	7,887.77	15,643.82	52,930.02	3.54
1,284	561,953.00	467,532.00	2.42	328,765.28	90,454.67	145,637.52	206,500.00	771,357.47	1.65
1,133	436,873.00	363 441.00	2.13	275,979.45	74,216.16	125,809.03	179 500.00	655,504.64	1.80
877	281,234.00	233,775.00	1.79	208,787.94	54,960.44	97,898.44	136,000.00	497,646.70	2.13
528	130,347.00	108,138.00	1.31	116,480.83	29,633.80	61,536.23	80,250.00	287,900.86	2.66
8,801	2,374,532.25	1,957,515.04	1.735	1,426,010.20	345,717.65	558,557.77	963,043.73	3,293,225.02	

Additional Cost Factors

Aside from depletion charges and rentals on undeveloped leases and other costs not included in the foregoing tabulation, there is a very important cost factor not generally appreciated by the public nor reflected as a tangible element in the cost sheets of producing wells. It is the cost of exploration to find and bring in new producing leases. Any oil operator who expects to remain in the business cannot be content with one well or one lease. The production will soon decline to where it will not pay expenses—much less yield a living. So the business of producing oil involves a constant search for and investment in new leases and the drilling of test wells thereon.

To obtain some idea of the hazard and costs incident to this branch of the business, the writer recently compiled from scout reports the number of test wells drilled in Oklahoma and Kansas in the 18 months ending June 30, 1923. These are known as "No. 1" wells, being in each instance the first well on the lease. All new leases, whether situated close to or offsetting production or otherwise, were included. The accompanying tabulation shows the result. Out of 3,829 of such wells, 2,317 or 60 per cent failed to produce oil. A few yielded gas, but the small number of paying gas wells encountered was offset by the number of wells reported as oil producers which were so small as to be soon abandoned as unprofitable to operate. Under the head of "Miscellaneous" are grouped those wells known to be far removed from production and, therefore, known to the industry as rank "wildcats." Of these, 82 per cent were failures.

One-Third Failures

But these were not all of the dry holes drilled in Kansas and Oklahoma during the period. The total completions (including now inside locations) was 12,189, of which 7,908 or 64 per cent, were oil producers; 1,054 were classed as gas wells and 3,227 were dry. Allowing a percentage of those reported as producing gas to be considered paying wells, it is fair to estimate that 4,000, or nearly one-third of the total completions were failures. The average loss on a dry hole after salvaging casing and rig is stated to be $15,000. Four thousand dry holes at this figure would amount to $60,000,000 in losses, equivalent to 20 cents per barrel for every barrel of crude oil produced in Oklahoma and Kansas during the 18 months' period. As stated before, these losses are not reflected on the cost sheets of producing properties, but must be added.

KANSAS-OKLAHOMA
Development Work for 18 Months Ending June 30, 1923

	Comp.	Oil	Gas	Dry
1922—Kansas	1 640	1,052	86	501
1922—Oklahoma .	6,153	4,155	565	1,433
Total	7,793	5,208	651	1,934
1923—Six months.	4,396	2,700	403	1,293
Total for 18 mo.	12,189	7,908	1,054	3,227
Total producers				7,908
Total dry plus gas				4,281
Total				12,189
Per cent of non oil producers				35

(From The Oil and Gas Journal.)

MID-CONTINENT FIELD
Development Results for 18 Months Ending June 30, 1923

1922—	Comp.	Oil	Gas	Dry
January	843	585	58	200
February	819	594	57	168
March	993	749	47	197
April	1,078	808	27	241
May	1,039	766	40	233
June	1,185	876	60	249
July	1,345	968	66	311
August	1,250	871	69	310
September	1,092	729	95	268
October	985	572	84	329
November	1,005	611	111	283
December	920	611	114	295
Total, 1922	12,552	8,640	828	3,084
Total, 6 mo. '23	7,156	4,640	556	1,958
Total, 18 mos.	19,708	13,280	1,384	5 042
Total oil producers				13,280
Total dry plus gas				6,426
Total				19,706
Per cent of non oil producers				32

(From The Oil and Gas Journal.)

Producing End "In the Red"

Another factor which is probably not understood outside of the oil producing industry is that, taking the oil producing business as a whole and including the investment lost by the unsuccessful operators as well as the successful, the industry is constantly on the red side of the ledger, being required, if production is kept up, to put more money into the business than is taken out. In other words, the strictly producing branch of the business is not self-sustaining. We have some reliable figures to illustrate this proposition. Osage County, Oklahoma, known as the Osage Nation, is a very prolific region and has been for a score of years. All of the mineral content, including the oil, is owned by the Osage Tribe of Indians and is administered by the Federal Government through leases issued to individual and corporate operators. Monthly sworn reports are required and the records are kept in such manner as to be unquestionable. During the 22 fiscal years ending June 30, 1922, the total production from the Osage Nation, according to Government reports, was 181,212,488 barrels. During that period, the oil producers paid to the tribe as the royalty owners, in royalties, lease rentals and purchase price of leases, the sum of $112,594,849.76. To obtain the above mentioned production, it was necessary to drill some 8,000 wells. Those drilled during the early portion of the period were shallower wells and did not cost as much as the new wells are costing; we, therefore, take as an average estimated cost of the wells $15,000 each, which represents an investment of $120,000,000 in development. Adding lifting costs, we have the following tabulation:

Development cost (8,000 wells and equipment)	$120,000,000.00
Bonus, rentals and royalties	112,594,849.76
Lifting cost averages at 60c per bbl.	108,727,492.80
Total	$341,312,342.56
Oil revenue at an average of $1.25 per bbl.	226.515,610.00
Deficit	$114,796,732.56
Less estimated gas revenue.	21,942,367.04
Net deficit	$ 82,854,365.52

This does not include maintenance expense, overhead or taxes and takes no account of the investment in pipe lines nor many other items of outlay. The Osage Nation has produced about one-seventh of the total production of the State during that period (1,332,456,563 barrels), so if we multiply the above-mentioned deficit by seven, we arrive at a fair estimate of how much more money the oil producing industry has put in than it has taken out of the State of Oklahoma, i. e. $579,980,558.64.

Importance of Small Well

It is generally asserted that there are about 200,000 wells in the United States producing approximately two barrels each, per day, and that 10,000 wells go into the two-barrel class each year. Petroleum engineers estimate that if these wells are taken care of and pumped regularly to prevent water encroachment, 200,000 of them will yield a total future production of 860,000,000 barrels, and that the 10,000 going into the two-barrel class this year will yet produce 43,000,000 barrels, of a total future production of something like 900,000,000 barrels from the 210,000 wells. If these wells are to be abandoned because of low price structure, the country faces a staggering economic loss far out-weighing in importance the amount of any reduction in the price of gasoline that could temporarily be accorded to the public through reduction of crude prices at this time.

As illustrative of the small well situation, the following authentic scout data from Oklahoma is submitted. During May, 1923, the total number of oil wells operated in Oklahoma was 56,181. These produced 516,796 barrels per day, or an average per well of 9.19 barrels. Of these, 2,902 wells in flush production areas (which have since declined) were producing a total daily of 303,462 barrels, or 5.1 per cent of the wells were producing 58.7 of the oil. This left 53,279, or 94.9 per cent of the wells producing 213,334 barrels or 41.3 per cent of the oil at an average of four barrels per well per day. Eliminating all flush and semiflush producing wells, there were 40,985 wells producing 79,195 barrels per day, or an average of 1,932 barrels per well. Thus 40,000 wells in Oklahoma would be jeopardized by a price cut.

SMALL POOLS IN OKLAHOMA AND THE AVERAGE PER WELL PER DAY

Pool—	Wells Opr.	Av per Well	Daily Prod.
Nowata	9,258	.61	5,647.38
Washington County	8,394	.94	7,890.36
Rogers County	4,582	.39	1,786.98
Osage, outside Burbank	7,462	4.01	29,922.62
Loco-Milroy	774	3.85	2,979.90
Allen	175	2.54	444.50
Walters	260	5.00	1,300.00
Cleveland	767	4.22	3 236.74
Bald Hill	1,023	3.08	3,150.84
Boynton-Muskogee	963	1.65	1,598.58
Okmulgee	564	3.96	2,233.44
Morris	1,050	2.42	2,541.00
Pickett-Prairie	391	1.70	664.70
Broken Arrow	312	2.06	642.72
Glen Pool	2,808	3.35	9,406.80
Jenks-Bixby	1,234	1.70	2,097.80
Red Fork	603	3.96	2,387.88
Sapulpa-Fisher	365	3.46	1,262.90
Total	40,985	1.932	79,195.14

A Word About the Future

From the commencement of this year, there has been an insistent demand upon the part of the public for petroleum products at a price, manifest to most everyone who is interested in the industry, below the cost of producing and manufacturing same. This demand of the public led to drastic progress of curtailment of drilling operations throughout the country, except in a few prolific spots. Manufacturers were unable to maintain any reasonable prices. They have tumbled and crashed from day to day for months, until the entire industry is faced with bankruptcy unless there is a change for the better and the change comes quickly. On behalf of the producing branch of the industry, I desire to state to the other two branches, that it has delivered the goods.

If the manufacturers and the marketers desire the production of less oil, the producers throughout the country have now given them what they want, and it is up to them to tell the public the truth and to charge the public a price sufficient to compensate the producer, not only for his production in the future, but for the terrible losses which he has sustained this year. There is now, at this very hour, less potential production in the United States and Mexico than there has been in the last 10 years. By "potential production" I mean known oil fields with production shut in, pinched in, or which can be developed, and I think I can safely say that every field in the United States and Mexico, without any exception, is producing every barrel of oil that it can produce from the wells now completed, and the possibilities for increasing the production in these various fields can be augmented but very little by additional work.

At Peak of Production

To those of us who are experienced in the study of this problem, it portends the greatest decline in production—taking Mexico and the United States as a unit—that this country has ever seen, and I am doubtful whether or not production will ever again exceed the total which will be established when the records of the United States and Mexico for the year 1923 are made up.

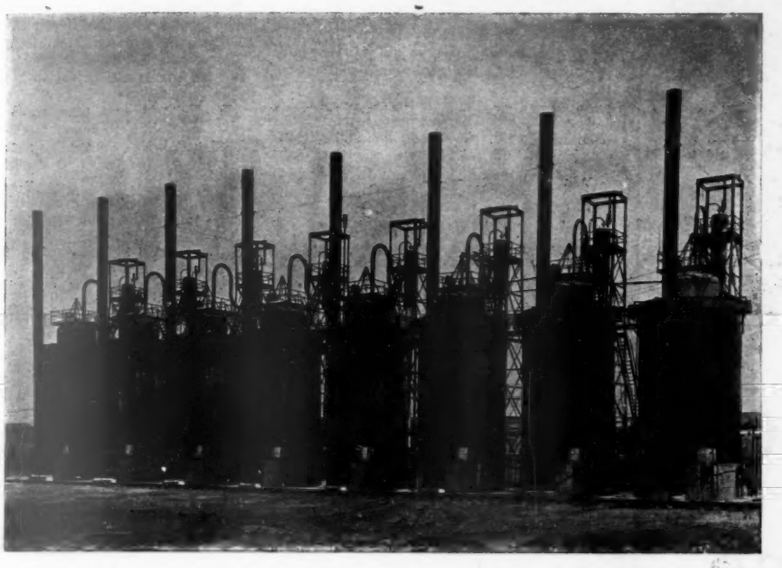
In discussing the present situation regarding the decline of production, I am not making any prediction; I am giving you a certainty in saying to you that every major field in the United States, except possibly Salt Creek, is now on a decline and many of them have been for a long time, and all of them will continue for a long time. There are no new fields now on the horizon to take their places. Unless there is a quick change in the situation, surplus stocks of oil, in my judgment, will be substantially wiped out in 1924 and 1925. The peak of production in the United States was attained in the latter part of July or the early part of August. It can be predicted with safety that by February 1 production will be 500,000 barrels a day lower than it was in mid-summer.

For these reasons, I demand of the major buying agencies, that they should, without further delay, raise the price of crude oil in order that the country may not be faced with the worst shortage it has yet seen.

R. E. Collom Resigns As State Supervisor Of California Oil

SAN FRANCISCO, Calif., Sept. 28.—It is announced that R. E. Collom has submitted his resignation from the position of State Oil and Gas Supervisor, effective October 1, 1923. With the exception of an interval of one year and a half as petroleum technologist for the United States Bureau of Mines, Collom has been identified with the work of the Department of Petroleum and Gas in various capacities since 1915—the year of its inception. He has been State Oil and Gas Supervisor since January, 1921, and during that time has seen the oil production of the State increase from 325,000 to 870,000 bbls. daily due to the intensive town-lot drilling of the gusher fields of the Los Angeles Basin. He leaves the State service to engage in the work of consulting petroleum engineer with headquarters in San Francisco.

ALWAYS AHEAD OF THE TIMES!



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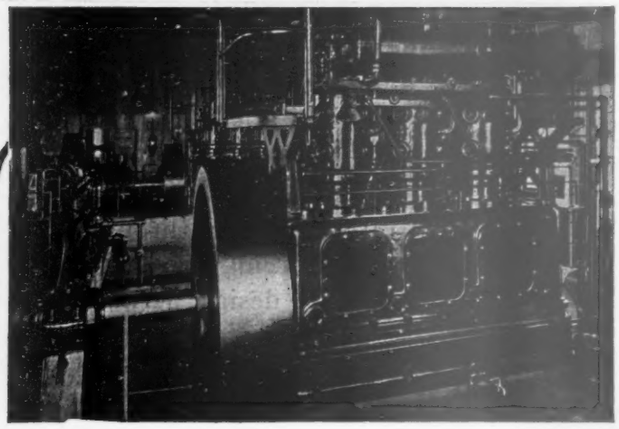

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33-SOE

Ingersoll-Rand

R-431

N. LOUISIANA-ARKANSAS

(Continued from Page 170)

set 10-inch casing at 200 feet in No. 1 Roscoe, Section 22-12-13. A. H. Tarver set 6-inch casing at 2,640 feet in No. 1 Gilbert, Section 32-12-11.

Caddo Parish

In the Pine Island district the Dixie Oil Co. completed No. 54 Robertshaw, Section 14-21-15, pumping 10 bbls. at 1,680 feet.

Very little drilling activity is under way in Caddo Parish at present. The Dixie Oil Co. set 6-inch casing at 1,430 feet in No. 55 Robertshaw, Section 14-21-15, Pine Island dsitrict. In the same territory the Fortuna Oil Co. is drilling at 75 feet in No. 19 Robertshaw, Section 23-21-15. The Fortuna Oil Co. tested No. 10 D. Thigpen dry at 1,550 feet and is now bailing to test at 1,587 feet, Section 5-20-15.

The Louisiana Texas Community Co. tested No. 1 Finch dry with no show at 2,739 feet and will drill deeper, Section 34-23-16, near Shreveport. The Vitek Oil & Refining Co. tested No. 1 Alexandria dry at 2,196 feet and is bailing to test at 2,205 feet, Section 9-20-15.

Louisiana Wildcats

Bienville Parish: The Ohio Oil Co. has a fishing job at 2,437 feet in No. 1 Randell, Section 12-18-7. The Standard Oil Co. is drilling at 1,552 feet in No. 1 Lena Scott, Section 21-17-8.

Bossier Parish: The Palmer Corp. tested No. 4 Crawford, Jenkins & Booth dry at 825 feet where they were trying to make a gas well and abandoned the well, total depth, 1,580 feet, Section 18-16-11. Skannell and associates completed No. 2 Railroad Lands, making 5,000,000 feet of dry gas at 2,450 feet, Section 13-17-12. Perkins and others are drilling at 2,410 feet in No. 2 Vance, Section 18-19-13. Sales & Walker are down 170 feet in No. 3 Bolinger, Section 30-23-12.

The Triangle Drilling Co. tested salt water with small showing of oil at 2,705 feet in No. 1 Bolinger, and is now waiting orders, Section 18-22-11. Zinc and others are drilling at 230 feet in No. 1 McGuffin, Section 4-18-11.

Lincoln Parish: Bob Church Pool is reaming to bottom from 2,705 feet in No. 1 Huffman, Section 20-20-2w. The Four Creek Oil Co. is down 360 feet in No. 1 Colvin, Section 27-20-3w. The Middle Fork Syndicate is waiting 6-inch casing to test No. 1 McKay at 2,260 feet, Section 8-20-3w.

Morehouse Parish: Morris, trustee, completed No. 1 Page, Section 23-20-5e, making 5,500,000 feet of gas at 2,295 feet.

The Consolidated Oil Co. is drilling at 1,235 feet in No. 1 Oden, Section 28-20-5e. Haynes and others set 6-inch casing at 2,545 feet in No. 1 Dixie Lumber Co. Section 54-17-3e.

Ladell and others set 8-inch casing at 975 in No. 13 fee, Section 3-19-5e; down 1,320 feet in No. 14, Section 27-20-5e, and 2,210 feet in No. 15 fee, Section 23-20-5e. Morris, trustee, is drilling at 1,020 feet in No. 1 Snyder, Section 34-20-5e. The Southern Carbon set 8-inch casing at 970 feet in No. 10 Spyker, Section 29-21-5e.

Ouachita Parish: Three gassers were completed in Ouachita Parish. Potts, trustee, brought in No. 2 Potts, Section 32-19-5e, making 6,000,000 feet of gas at 2,250 feet. The Texas Co. completed No. 2 Gibbs, Section 20-19-5e, making 15,000,000 feet of gas at 2,245 feet, and the Standard Carbon Co. brought in No. 1 Lieber, Section 23-19-5e, making 2,500,000 feet of gas at 2,265 feet.

Boone, trustee, set 8-inch casing at 905 feet in No. Lieber, Section 4-19-5e. The Consolidated Carbon Co. is drilling at 682 feet in No. 1 Wilson, Section 8-19-5e. Florsheim and others set 6-inch casing at 2,175 feet in No. 1 Richie, Section 32-19-5e.

The Fortuna Oil Co. is down 405 feet in No. 1 Cole, Section 35-20-4e. The Maury Drilling Co. set 6-inch casing at 2,150 feet in No. 1 McEwen, Section 29-19-4e. The Monroe Louisiana Carbon Co. is down 2,175 feet in No. 1 Hancock, Section 28-19-5e. The Ouachita Natural Gas Co. is drilling at 700 feet in No. 2 Liber, Section 5-19-4e.

The Southern Carbon Co. is down 2,175 feet in No. 23 fee, Section 21-19-5e. It is reaming to bottom of No. 5 Fairbanks at 2,057 feet, Section 43-20-5e. The Texas Co. has derrick up for No. 1 Winchit, Section 31-19-5e; rig up for No. 3 Gibbs, Section 29-19-5e; set 6-inch casing at 2,080 feet in No. 2 O'Neal, Section 33-19-4e.

The Tidal Oil Co. is drilling at 1,965 feet in No. 1 Farmer, Section 4-12-5e. The Standard Carbon Co. set 8-inch casing at 937 feet in No. 1 Puckett, Section 15-19-5e.

The United Oil & Gas Production Co. set 8-inch casing at 940 feet in No. 2 Palkum, Section 3-19-5e. Zeigen and others are drilling at 1,740 feet in No. 3 Muench, Section 28-19-5e.

Union Parish: Davidson & Palmer have rig up for No. 1 Frost Johnson Lumber Co., Section 12-23-1e. Love Brothers set 6-inch casing at 1,990 feet in No. 1 Securtiy Trust, Section 12-23-1w. The Union Parish Drilling Co. is down 1,850 feet in No. 3 Clark, Section 17-23-1e.

Webster Parish: The Fortuna Oil Co. is down 2,005 feet in No. 1 S. J. Marritt, Section 14-21-10. The Oil Fields Gas Co. set 16-inch casing at 100 feet and has drilled to 250 feet in No. 1 Maynor, Section 27-23-10.

Arkansas Wildcats

Calhoun County: The Checkerboard Oil Corp. drilled No. 1 Abbott to 2,525 feet but is plugging back to test at 2,178 feet, Section 20-14-14.

Clark County: The American Drilling Co. is down 380 feet in No. 1 Wilson, Section 15-8-22.

Drew County: Graves and associates are drilling at 1,110 feet in No. 1 Karns, Section 10-13-6. The Monticello Ridge Oil Co. set 12½-inch casing and drilled to 1,420 feet in No. 1 Wilson, Section 10-12-7. W. H. Rhodes and others set 12½-inch casing at 80 feet in No. 1 Martin, Section 27-12-8.

Grant County: McKenzie & Emloy are down 1,350 feet in No. 1 Prague, Section 26-5-12. The Parr Oil Co. has shut down No. 1 Britch at 2,255 feet, Section 31-4-11.

Hempstead County: The Columbus-Hope Oil Co. junked and abandoned No. 1 King at 2,100 feet, Section 24-11-25.

Jefferson County: Fuller-Draiss are drilling at 2,355 feet in No. 1 Trimble, Section 31-5-8, near Pine Bluff.

Little River County: Gains and others are down 1,500 feet in No. 1 Goodwin Timber Co., Section 15-13-29. The Red River Valley Oil Co. is drilling at 2,780 feet in No. 1 Toland Taylor, Section 29-13-20.

Johnson and associates set 12½-inch casing and drilled to 655 feet in No. 1 Hawkins, Section 10-11-31.

NEW TANK BULLETIN

The United Iron Works, Inc., has just issued a bulletin descriptive of "United" Water-Seal Top Tanks. The construction of "United" Water-Seal Top Tanks is similar to other steel tanks, except that they have a flat roof constructed of steel plate, tight riveted and caulked water tight. The roof is located about seven inches below the top of last ring of tank shell, and is carried on steel framing properly designed to carry the load intended. The space between the top of tank ring and roof is then filled with water which can be kept constantly circulating, thus keeping the tank and its contents cool. Not only is the escape of rising vapors entirely eliminated, but the fire hazard, it is said, is also reduced to a minimum.

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The Compagnie Fluviale et Maritime de Transports de Petrole, with a capital of 1,000,000 francs, divided into 1,000 shares of 1,000 francs each, has been formed in Paris. It will devote its attention to the transport of oil.

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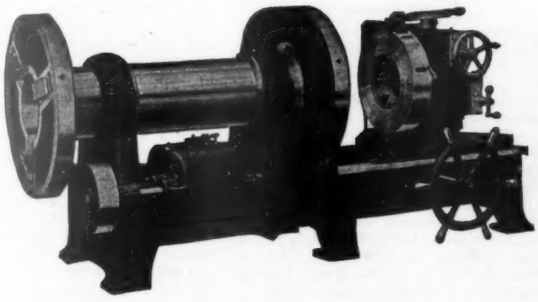

Repeaters

When you are ready for a new pipe machine will you buy another like the one you now own? B & K owners, who are a discriminating class, place repeat orders. A careful survey of sales for many years back shows this to be true.

The reason is not hard to find. The machines are so rugged and well proportioned, so convenient to handle, and so well designed, that once a user, repeat orders are the rule.

The well known Peerless Die-Head, or the new Tangent Die-Head can be furnished.

Catalog tells all about them

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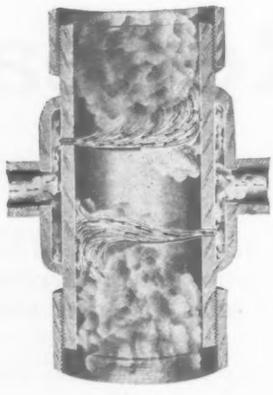
Cost of KLIEWER STEAM SNUFFERS is low—we will be glad to give further details, or make demonstrations.



Cross section of Kliewer Steam Snuffer Showing Snuffer in action.

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512 Wright Building
TULSA, OKLA.

NORTH CENTRAL TEXAS

(Continued from Page 44)

feet; Gatewood and others' No. 1 Boone, drilling in blue shale at 1,660 feet; Gwynn and others' No. 2 Mrs. Carter, cementing to shut off water, sand at 1,580 feet showing some oil; Hardly Able Oil Co.'s No. 1 Richardson, rigging up cable tools at 1,756 feet; Hester and others' No. 1 Carter Bros., testing oil sand at 1,575 feet; Hinley and others' No. 2-B Wilson, drilling at 1,610 feet; Hudspeth and others' No. 1 Black, at 1,070 feet; Jetter and others' No. 1 Wilson at 1,220 feet; Kentucky Production Co.'s No. 1 Wilson, testing an oil sand showing for a producer at 1,392 feet; Lane and others' No. 1 Parrish, cleaning out with a spudder, sand showing oil at 1,394 feet; Lynch and others' No. 1 Birdwell, drilling at 403 feet; Maer and others' No. 5 Carter, drilling in rock at 1,405 feet; No. 1 Netherton, spudding; Nance and others' No. 1 Zota, drilling at 830 feet; Norton and others' No. 1 O'Donnell, swedging 8¼-inch casing at 1,115 feet; Payne and others' No. 1 Wilmot, bailing and testing an oil sand at 1,605 feet; No. 2 Wilmot, drilling at 1,420 feet; Petroleum Production Co.'s No. 3-C Wilson, at 1,165 feet; Roberts and others' No. 4 Parrish, bailing and testing an oil sand at 1,775 feet; Sixty-Six Oil Co.'s No. 1 Wilson, has 600 feet of oil in the hole from a sand at 1,585 feet; Smith and others' No. 1 Wilson, shut in on top of an oil sand at 1,392 feet; No. 2 Wilson, drilling in rock at 1,545 feet; Staley and others' No. 1-C Wilson, drilling at 205 feet; Staley & Wynne No. 2 Carter Brothers, drilling slow in an oil sand at 1,565 feet; No. 2 Mrs. Carter, setting 6⅝-inch casing at 1,563 feet; Sunshine State Oil & Refining Co.'s No. 6 Carter Brothers, drilling in brown shale at 1,470 feet; The Texas Co.'s No. 4 Carter Brothers, are making a seat for 8¼-inch casing at 1,566 feet; No. 5 Carter Brothers, drilling a sand at 1,190 feet; Swastika Oil Co.'s No. 7 Richardson, drilling at 1,150 feet; No. 8 Richardson has 300 feet of oil in the hole from a sand at 1,345 feet; No. 1 Neal, drilling without any showing at 2,950 feet; Verschoyle and others' No. 1 Wilson, drilling at 1,575 feet; Doctor Wallace's No. 8 K. & K., drilling in brown shale at 1,415 feet.

Young County

Completions: Calmo Oil Co.'s No. 1 McLaren, dry at 3,954 feet; Simms Oil Co.'s No. 3-A Lynn, flowing 20 bbls. at 2,650 feet.

Drilling: Bullington and others' No. 1 Hankins, drilling at 830 feet; Coleman and others' No. 1 Jones, at 330 feet; Gulf Production Co.'s No. 2-A Hockaday, fishing job at 3,395 feet; Holcomb and others' No. 1 Bullock, drilling at 445 feet; McGuire and others' No. 1 Carter, underreaming 10-inch casing at 1,575 feet; Mid-Kansas Oil & Gas Co.'s No. 1 Gibson, drilling at 2,805 feet; No. 1 Moren, fishing at 1,165 feet; Dudley Miller's No. 2 Hughes, cleaning out at 700 feet; Mitchell and others' No. 1 Hightower, drilling in blue shale at 1,485 feet; Mutual Oil Co.'s No. 2 Glidwell, has a show of oil and gas and shut down on top of a sand at 1,957 feet; Nash and others' No. 1-B Williams, underreaming 10-inch casing at 1,100 feet; North American Refining Co.'s No. 1-B Scott, fishing at 2,800 feet; Robinson and others' No. 1 Grubbs, underreaming 10-inch casing at 1,000 feet; Shamrock Oil Co.'s No. 2 Bower, showing an estimated production of 20 bbls. from a sand at 1,560 feet; Smith and others' No. 1 Benson, drilling in brown shale at 780 feet; Snowden & McSweeney's No. 1 Carter, underreaming 10-inch casing at 1,475 feet; Stovall and others' No. 1 Stovall, drilling at 1,950 feet; Texas Eureka Syndicate's No. 1 Harrell, has 300 feet of oil in the hole and preparing to shoot in lime at 4,020 feet; Whitehead and others' No. 1 Johnson, cleaning out after fishing job at 4,229 feet.

Stephens County

Completions: Admiral Oil Co.'s No. 1 Sloan dry at 3,690 feet.

Drilling: Critten and others' No. 1 Cobb, running 12½-inch casing at 925 feet; Magnolia Petroleum Co.'s No. 2 Couger, fishing for casing at 2,475 feet; McLain and others' No. 1 Gin Lot, fishing for casing at 3,300 feet; The Texas Co.'s No. 19 Black, drilling in lime at 4,070 feet; Texas & Pacific Coal & Oil Co.'s No. 8 Newell, testing a casing seat at 4,075 feet; Corbett and others' No. 1 Williams, running 8-inch casing at 1,585 feet; Curry Pool Oil Co.'s No. 1 Jones, shut down for 8-inch casing at 2,270 feet; Dalsa Oil Co.'s No. 1 Black, drilling at 825 feet; No. 6 Jones, drilling by casing at 3,145 feet; Humble Oil & Refining Co.'s No. 1 Wild, drilling with a hole full of water at 1,630 feet; Landreth Production Co.'s No. 1 Moore, drilling at 2,760 feet; Little and others' No. 2 Drake, drilling by casing at 365 feet; Scott and others' No. 1 Davis, spudding for a No. 2 hole, first one abandoned; Swensondale Oil Co.'s No. 29 Swenson, drilling in blue shale at 2,580 feet.

Eastland County

Completions: Gholson and others' No. 1 Shugart, 30 bbls. at 2,910 feet; Kirk-Brewer No. 2 Shugart, 100 bbls. at 2,335 feet; The Texas Co.'s No. 1 Clark, 40 bbls. at 3,265 feet.

Drilling: Ablon and others' No. 1 Collins, drilling in shale at 1,150 feet; Brothers Oil Co.'s No. 2 Rogers, drilling in shale at 2,375 feet; Donnelly Drilling Co.'s No. 1 Allen topped lime and shut down for casing at 3,100 feet; Lone Star Oil & Gas Co.'s No. 1-A Hogg, drilling at 940 feet; Mook Texas Co.'s No. 3 Ross, drilling at 490 feet; No. 2 Harrell, has a sand showing some oil and 2,000 feet of water in the hole at 3,620 feet; Clayton and others' No. 2 Jones, shut down for 8¼-inch casing at 2,220 feet; Gordon Petroleum Co.'s No. 1 Amis, shut down in a lime formation at 3,000 feet; No. 1 Ray set 6⅝-inch casing and drilling at 2,640 feet; Rosenfield and others' No. 1 Burnett, fishing at 1,550 feet; Stovar and others' No. 1 Ray, drilling at 865 feet; Prairie Oil & Gas Co.'s No. 5-A Brooks, pulling big pipe at 2,250 feet.

Wildcats

Mitchell County Completions: Underwriters Producing & Refining Co.'s No. 3 T. & P. land, 75 bbls. at 3,075 feet.

Drilling—Colo-Tex Petroleum Co.'s No. 2 Foster, drilling by tools at 2,625 feet; Fensland Oil Co.'s No. 1 Badgett, laying a water line at 1,750 feet; Kelsay and others' No. 1 Badgett, drilling in hard shale with the well flowing 15 bbls. at 3,030 feet; Henry Reilly's No. 1 Morrison, underreaming to set casing at 2,955 feet; Sloan and others' No. 1 O'Neil, drilling at 2,590 feet; California Petroleum Co.'s No. 1 Morrison, drilling in hard rock at 3,905 feet; Underwriters Production & Refining Co.'s No. 5 Morrison set 6⅝-inch casing at 2,580 feet.

Brown County Completion: Bailey and others' No. 1 Cleveland 12,000,000 feet of gas at 1,630 feet.

Drilling: Carlton and others' No. 1 Fomby, sidereaming at 1,312 feet; Gillette and others' No. 2 Prather, fishing for tools at 890 feet; Hart and others' No. 1 George, shut down for casing at 2,360 feet; Omaha Southern Oil Co.'s No. 2 Gaines, drilling at 1,235 feet; Pennant Oil Co.'s No. 1 Strickland, drilling in shale at 1,420 feet; Stone and others' No. 1 Triplett, making ready to drill at 1,450 feet.

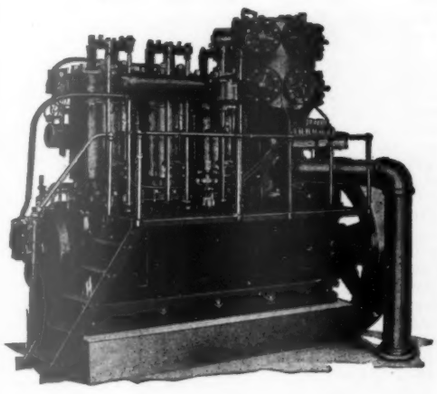
Scurry County Completion: Stanton Oil Co.'s No. 1 Reilly, dry at 3,500 feet.

Drilling: Lou Tex Oil Corp.'s No. 1 Moore, showing oil and gas from a gray lime and drilling at 3,215 feet.

Palo Pinto County Completions: Mid-Dalton Oil Co.'s No. 2 Dalton, dry at 4,060 feet; Upham Gas Co.'s No. 1 Ward, dry at 3,830 feet.

Drilling: Mutual Oil Co.'s No. 1 Robinson, drilling at 1,155 feet; Pender Production Co.'s No. 1 Slemons, drilling in hard rock at 3,500 feet; Thomas and others' No. 1 Thomas, drilling in blue shale at 3,205 feet; Upham Gas Co.'s No. 3 Watson, drilling at 2,205 feet; Buckeye Pipe & Supply Co.'s No. 1 Morgan, drilling in hard rock at 4,035 feet; Cunningham and others' No. 1

The Reeves Vertical Gas Engine—Compressors For Gas Booster Plants



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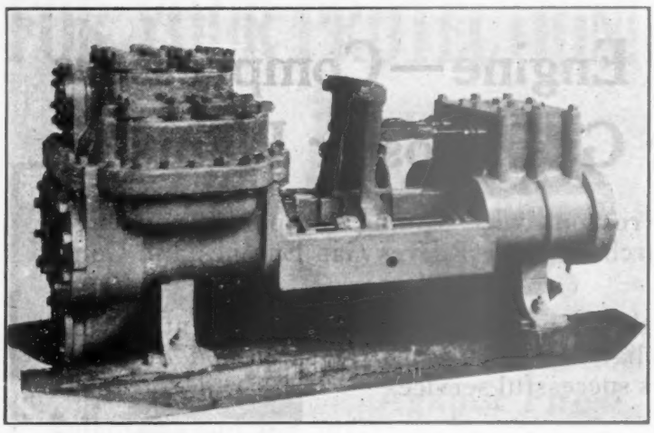

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Poer, drilling at 2,755 feet; Dalton Oil Co.'s No. 5 Dalton, underreaming 10-inch casing, total depth 3,410 feet; Moore and Snebold's No. 1 Bools, drilling in shale at 3,365 feet; Scott and others' No. 1 River Bed, running 5-inch casing at 3,520 feet; Singleton and others' No. 1 Hart, shut down for 8-inch casing at 1,665 feet.

Shackelford County: Drilling—Humble Oil & Refining Co.'s No. 1-B Lynch, shut down for water at 3,485 feet; No. 1-D Poindexter, drilling at 1,365 feet; Landreth Oil Co.'s No. 2 Lynch, shut down for 5-inch casing at 3,585 feet; Texhoma Oil & Refining Co.'s No. 2 Black, drilling with a hole full of water at 1,850 feet.

Clay County

Drilling: Dunning Oil & Gas Co.'s No. 1 Hapgood, underreaming 6⅝-inch casing with hole full of water at 2,950 feet; Gulf Production Co.'s No. 1-A Boddy, drilling at 1,518 feet; the Knox & Finley Development Co.'s No. 1 Scott, fishing sand at 1,145 feet showing some oil; Lone Star Gas Co.'s No. 6 Edrington, set 8¼-inch casing and cemented at 2,338 feet; No. 7 Edrington, drilling at 385 feet; No. 12 Miller, 12,000,000 feet of gas at 1,435 feet; No. 13 Miller, cemented 8-inch casing at 1,428 feet; Nebraska Oil & Gas Co.'s No. 1 Myers has put 1,200 lbs. of acid in the hole to eat 300 feet of drill pipe, total depth 3,308 feet; Moore and others' No. 1 Hull, testing a sand at 1,144 feet; John O'Neil No. 1 Kuykendall, drilling in brown shale at 1,600 feet.

Montague County

Completions: Comet Petroleum Co.'s No. 1-A Cook, dry at 2,838 feet.

Drilling: The Texas Co.'s No. 1-A Gist, moving in rotary tools at 580 feet; No. 1 Howard, drilling in a sandy lime at 1,175 feet; Gulf Production Co.'s No. 1-A Benton, set 12½-inch casing at 1,070 feet and drilling at 1,075 feet; Mascho Oil Co.'s No. 1 Howard, drilling in soft rock at 1,300 feet; Texhoma Oil Co.'s No. 1-A Crenshaw, shut down for 8¼-inch casing at 1,200 feet.

Wise County Completions: Michigan Oil & Gas Co.'s No. 1 Young, dry at 2,500 feet.

Armstrong County Drilling: Magnolia Petroleum Co.'s No. 1 J. A. Ranch, drilling at 350 feet.

Carson County Drilling: The Texas Co.'s No. 3 Burnett, a standard rig. No. 1 Burnett, shut down at 40 feet. Culberson Brothers' No. 1 Armstrong, shut down for 15-inch casing at 200 feet; Gulf Production Co.'s No. 3-A Burnett, will fish for lost tools at 3,035 feet; Humphreys Oil Co.'s No. 1 Sandford, fishing job at 2,530 feet; Tipton Stone and others' No. 1 McConnell, drilling in a wash at 3,003 feet.

Hutchinson County Drilling:. Coline Oil Co.'s No. 1 Sanford, drilling in lime at 3,150 feet; Humphreys Oil Co.'s No. 1 Johnson, lightning hit derrick, well on fire at 2,585 feet; Montgomery and others' No. 1 Johnson, underreaming at 800 feet; Plains Oil Co.'s No. 1 Weatherly, will test an oil showing formation at 3,270 feet.

Potter County Drilling: Producers & Refiners Oil Co.'s No. 2 Masterson, trying to straighten a crooked hole at 2,415 feet; No. 1-A Bivens, spudding at 80 feet; No. 2-A Bivens, underreaming 15½-inch casing at 400 feet.

Wheeler County Drilling: Skelly Oil Co.'s No. 1 Davis, drilling in blue shale and red beds at 2,200 feet; Tyrrell and others' No. 1 Sheldon, drilling at 305 feet; Whittington and others' No. 1 Williams, showing 30,000,000 feet of gas, shut down waiting on pumps to lubricate off gas around 2,100 feet.

PRODUCTION REPORT

Week Ending September 27, 1923

Burkburnett

American Refining Co.	310
Barkley & Meadows	1,900
Humble Oil & Refining Co.	690
Gulf Production Co.	1,535
Magnolia Petroleum Co.	3,810
Middle States Oil Corp.	280
McMahon Oil Co.	535
Oklahoma Petroleum & Gas Co.	395
Panhandle Refining Co.	555
Ryan Petroleum Co.	130
Sinclair Oil & Gas Co.	20
W. G. Skelly	285
The Texas Co.	750
Texhoma Oil & Refining Co.	610
Miscellaneous	12,215
Total	24,020

Electra

Empire Gas & Fuel Co.	2,180
Humble Oil & Refining Co.	175
Griswold Oil Co.	580
Gulf Production Co.	1,055
Magnolia Petroleum Co.	5,540
Middle States Oil Co.	200
McMahon Oil Co.	215
The Texas Co.	5,530
Texhoma Oil & Refining Co.	2,750
Miscellaneous	7,000
Total	25,225

Iowa Park, Archer County and Petrolia

Iowa Park—	
American Refining Co.	60
Griswold Oil Co.	40
Gulf Production Co.	65
Middle States Oil Co.	5
Ryan Petroleum Co.	40
Texhoma Oil & Refining Co.	40
Miscellaneous	2,160
Archer County—	
American Refining Co.	455
Griswold Oil Co.	420
Gulf Production Co.	460
Humble Oil & Refining Co.	155
The Texas Co.	405
Texhoma Oil & Refining Co.	2,225
Miscellaneous	12,275
Petrolia—	
Gas Production Co.	100
The Texas Co.	50
Miscellaneous (Petrolia)	250
Total	19,206

Stephens County

Empire Gas & Fuel Co.	55
Gulf Production Co.	1,815
Humble Oil & Refining Co.	1,555
Magnolia Petroleum Co.	935
Mid-Kansas Oil & Gas Co.	2,015
Prairie Oil & Gas Co.	865
Sinclair Oil Co.	105
The Sun Co.	275
The Texas Co.	3,625
T. & P. Coal & Oil Co.	1,050
Miscellaneous	8,375
Total	20,670

Eastland County

Empire Gas & Fuel Co.	20
Gulf Production Co.	850
Humble Oil & Refining Co.	150
Magnolia Petroleum Co.	480
Mid-Kansas Oil & Gas Co.	35
Panhandle Refining Co.	470
Prairie Oil & Gas Co.	580
Sinclair Oil Co.	560
The Sun Co.	20
The Texas Co.	305
T. & P. Coal & Oil Co.	1,040
Miscellaneous	3,620
Total	8,130

Other Fields

Strawn—	
T. & P. Coal & Oil Co.	260
Miscellaneous	500
Moran—	
Empire Gas & Fuel Co.	160
Humble Oil & Refining Co.	790
The Texas Co.	195
Texhoma Oil & Refining Co.	230
Miscellaneous	2,780
Coleman County—	
Miscellaneous	140
Brown County—	
Miscellaneous	500
Comanche-Eastland—	
Humble Oil & Refining Co.	300
Empire Gas & Fuel Co.	10
Magnolia Petroleum Co.	1,310
Mid-Kansas Oil Co.	230
Prairie Oil & Gas Co.	240
Sinclair Oil & Gas Co.	70
The Texas Co.	300
T. & P. Coal & Oil Co.	85
Miscellaneous	2,850
Young County—	
Gulf Production Co.	225
North American Refining Co.	305
Oklahoma Petroleum & Gas Co.	95
Panhandle Refining Co.	435
Sinclair Oil & Gas Co.	85
The Texas Co.	130
Miscellaneous	3,350
Mitchell County	680
Reagan County	150
Jack County	35
Total	16,440
Total all fields	113,690
Total last week	112,735
Gain	955

AUTOMOBILES ON THE CONGO

Out of 397 automobiles in regular use in the Congo, 265 are foreign built; out of 26 motor boats, only four are of Belgian origin, and the 30 tractors in use in the Congo are all from firms other than Belgian. Only 16 out of 336 motorcycles imported in 1922 were of Belgian manufacture.

RAILWAY PROTESTS TAX

CHATHAM, Ont., Oct. 1.—The Canadian Pacific Railway has appealed to the Canadian Government to disallow the mineral tax authorized by the Province of Alberta. The Alberta law provides for a tax of 3 cents an acre on mineral lands, including oil lands.

STEEL PLATE CONSTRUCTION

Your Most Deceptive Sense

will not deceive you about the "GEM" Bilged Steel Barrel. It's just as tough and strong as it looks.

The Bilge shape will reduce your handling costs and the patented hoop formations are the last word for long life.

Material is 13 gauge and the size is 55 gallons. Furnished black, galvanized or tinned.

"Presteel" Light Gauge Drums 15, 30, 50 and 55-gallon capacities.

"Presteel" I. C. C. Drums 30, 55 and 110-gallon capacities.

"Presteel" Special Drums 150 and 175-gallon capacities.

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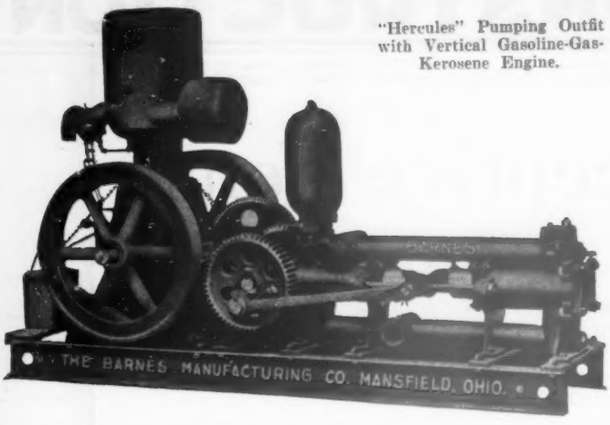
Gulf, Matagorda County, Texas



"Hercules" Pumping Outfit with Vertical Gasoline-Gas-Kerosene Engine.

For long distance pumping and high elevations

Barnes Pumping Outfits are built for pressures up to 500 lbs. per square inch. They will, therefore, easily pump through five or ten miles of 2-inch pipe or to extreme elevations. For supplying water to Well Drilling Rigs or for oil pipe line pumping, they have no equal. Since 1918 a Barnes Pumping Outfit has been in continuous operation, in the Kentucky oil fields, delivering an unfailing water supply through a mile and a half of pipe line to storage tanks located on a cliff 450 feet above the pump.

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OUTSIDE PACKED
PUMPS

Barnes Outside Packed Pumps are designed to withstand the heavy duty of the oil fields. All parts which come under heavy strains are made of the strongest materials, cast steel and malleable iron. Its double train of machine cut "stub-tooth" gears insure an even distribution of power and reduce the wear on bearings and pinions. The all bronze, one piece valves rest on conical bronze seats.

Years of unflinching steady service have demonstrated that these pumps are built for the hardest of hard work. Hundreds of Barnes outfits are furnishing water for drilling rigs and performing on pipe line work in the oil fields.

Barnes Pumping Outfits are powered with vertical or horizontal engines operating on gas, gasoline, kerosene or crude oil, or powered with electric motors, as the conditions of your job demand.

Mail the coupon for Bulletin J8 with complete information and prices on Barnes Pumping Outfits with Vertical Engines.

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MANSFIELD, OHIO.

Ask for Oil Well Supply Co. Bulletin No. 47 at any of their 100 branch stores in all oil fields or mail the corner stub to us.

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Please send Bulletin J8 with prices and complete information.

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CITY .....

GETTING SAFETY TO "BELONG" TO A FORCE

(Continued from Page 158)

any cost. Some may, at times, seem to think that they haven't much use for "this safety stuff," yet when it comes to a showdown they will not surrender one iota of their right of full protection. Why is it then if the instinct of self-preservation is so deep seated, so primary in a man's nature, that a man will take chances, gamble with the cards of fate? Is it not because of the sporting element in his make-up? It isn't because he doesn't know the odds are against him when he sits in a game with carelessness, thoughtlessness and inattention. As Doctor Risteen so aptly expressed it in his article "Why are Workmen Careless," he has unconsciously allowed room in his mental background for the attitude "That has happened to others, but it can never happen to Me." He doesn't say that, no, he doesn't even think it, but because he has allowed it to creep into his attitude, he rushes across the track in front of a speeding train, or takes a chance in his work because "By golly, I've done it that way for years and have never got hurt yet."

It is the problem of the safety man to turn the sporting element into another and a profitable channel. Appeal to the competitive spirit in sportsmanship. Every runner in the race of life should run with a prize in mind. If we run not for a prize our efforts are wasted. Show the men the foolishness of assuming that anyone is given a special immunity against accidents and set them out on a run for a "No Accident" record. Persuade them to stop gambling with fate and invest in safety which pays sure profits.

The Crowd Appeal

Safety may make appeals by way of department or gang spirit. We have all noted the influence of the crowd upon men's actions. We often imitate the customs, fashions and habits of our associates. If a gang attitude is such that it encourages the spirit of bravado or recklessness, the safety man who maintains close contact with and knows the men will soon recognize this. He will institute suggestive, educational or disciplinary methods to remove this spirit—the weed found growing among the wheat in the field of safety. Disciplinary measures should be used as a last resort.

This brings us to consider the instinct of subordination. Few men expand under compulsion, but most of us, in the stress of life's struggles turn instinctively to follow a leader who commands respect. Men ordinarily do not like to be "ordered around." Soldiers swear by the captain who is strong on discipline if he is at the same time just in his dealings. Leaders of men in industry should be just and impartial before they are generous. Men thresh around under an inefficient though it may be an indulgent leadership. Those placed in positions of responsibility and leadership may be so indulgent, so thoroughly a "good fellow" that their command of respect becomes practically nil. There must be certain rules and regulations, established to govern everyone. These should be so stated that they will be easily understood. Once established, they should be impartially administered.

Disciplinary Measures

In dealing with men in our company we have had few cases where it has been necessary to use disciplinary measures. We have found that a reprimand is generally sufficient to correct cases of infraction of safety rules. If a boilermaker is found to be violating our goggle rules his record is charged with a reprimand from the safety man. If he is guilty of a second offense he is taken before the employment manager in a Kangaroo Court. The employment manager generally asks the safety man, department foreman and sometimes the first aid superintendent, to sit with him. They hear the evidence, review his record and pass upon the form of discipline. Usually, if the man is temporarily demoted, to the general labor gang from three to ten days at the rate paid to laborers, the discipline results in lasting good and reacts favorably through the department and the plant. Rarely has it been necessary for us to discharge men for infraction of the safety regulations.

Disciplinary measures must be handled without malice, but with goodwill to all. If based on that spirit and with the ultimate good and protection of the men in view, and not predicated upon the spirit of authority and power alone, they may be employed as a helpful means of getting safety to "belong."

Maximum of Safety

By including the methods we have discussed, we may be instrumental in bringing about the maximum of safety, when all men shall acknowledge it's reign in their hearts and lives, when disciplinary measures are no longer required, when all shall have entered into a full appreciation of the fruits of careful habits, when safety really "belongs around here" and is the first consideration in every action.

The urge found in the hearts of owners and executives to plant safety work and prevent human wastage is acknowledgment of responsibility to their fellows; it is the answer given to the searching question "Am I my brother's keeper?" The profits in business resulting from such an acknowledgment have been simply another demonstration of the soundness of the principles we find laid down in Holy Writ. If we, as safety men, get this vision of our work and remember that the working out of this acknowledged responsibility has been peculiarly and particularly assigned to us, we will have found the secret of success in getting safety to "belong."

MEXICO FIELDS

(Continued from Page 56)

Agwi Companies have commenced to make hole in the No. 21 Popote, in the State of Nuevo Leon, not far from Linares, which in turn is no great distance from Monterrey. A diamond drill is being used. Sheldon & Burden, who have been very successful with this class of tools, being the contractors. This structure at Popote is fairly well defined and the test will be watched with interest by several major companies assisting the Agwi companies as they have acreage blocked out on this structure in juxtaposition to the Agwi holdings.

At Ebano, Mexican Petroleum Co., is drilling as follows: No. 18 Chijol, in limestone at 2 041 feet; No. 19 in shale at 925 feet; No. 26 La Dicha in limestone at 1,975 feet, and No. 30 in shale at 880 feet. Huasteca Petroleum Co., just north of the Tamesi River, at La Culebra, is drilling No. 2 in limestone at 2,974 feet.

In the Marland Field, Cia. Pet. Franco Espanola, No. 11 Limon, has been deepened to 2,085 feet, without any appreciable increase in the oil show.

In Los Esteros, in the State of Tamaulipas, American International Fuel Co., No. 10, is drilling in gray limestone at 2,525 feet, and No. 11 there is drilling in shale at 375 feet.

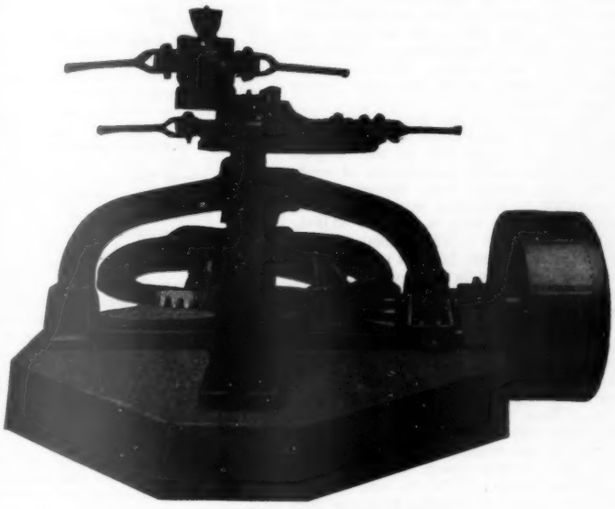
In the Caracol district, Hummel & Frix, No. 3, Lot 51, are drilling in shale at something over 1,000 feet, carrying 8-inch. Woollett & Parker, No. 1, Lot 94, are drilling at 2,110 feet in a limestone, with some gas showing.

In El Barco, Mexican Gulf Oil Co., No. 43, is drilling in the San Felipe at 1,960 feet.

The Isthmus Country

The news from South Mexico is not encouraging. In the Isthmus of Tehuantepec, Mexican Eagle Oil Co., has now reduced its field operations to one of string tools and this is also true of the operating subsidiary of the Mexican Seaboard Oil Corp., which is now drilling a test in Southern Vera Cruz. The several wells Mexican Eagle has finis during the past two years have been, comparatively speaking, failures. Cia. Mexican-Holandesa, La Corona, (Royal Dutch-Shell), has recalled its land department force and chief geologist for that region.

ANOTHER REID



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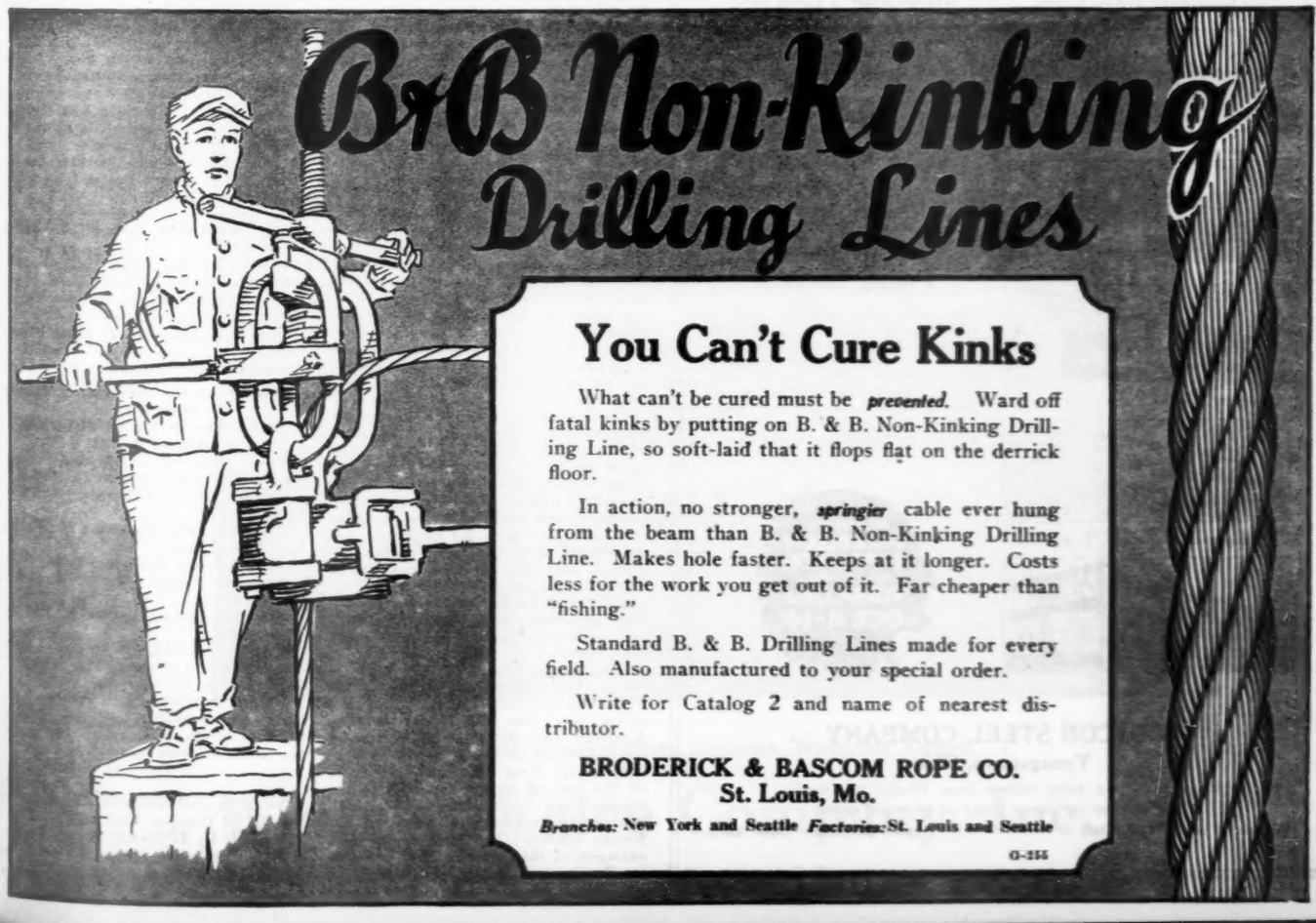
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Truscon Standard Buildings are permanent; the side wall panels and roof are manufactured from 18-gauge Truscon Alloy Steel—a material that has proven its superior durability. The maximum of daylight and ventilation is obtained with Truscon Steel Windows.

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Widths: 60'-64'-68'-72'-76'-80'-84'-88'-90'-96'-98'-100'-106'-108'-116'

SAWTOOTH TYPE
Widths: Any multiple of 28'

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PETROLEUM SITUATION AS SEEN BY BANKERS

(Continued from Page 66)

Fuel oil, though always by far the greatest in actual volume, has been in an economic sense a by-product, and the efforts to find a market for it have led at times to drastic competitive measures. In recent years its advantages over coal in the generation of power, especially in ocean and railroad transportation, have been more generally recognized, and its popularity has increased to such a point that a reversal of its economic position in the near future seems probable.

This growth in the use of petroleum products in the United States has already made itself felt in our foreign trade. The annual importation of crude petroleum, largely from Mexican fields controlled by American capital, increased from 21,000,000 bbls. in 1916 to 53,000,000 in 1919, and to 124,000,000 in 1922. In other words, the imports in 1916 were 6.6 per cent, and in 1922 were 21.2 per cent of the domestic consumption for those years.

During the same period the volume of refined oil products exported has remained stationary while their production has increased 129 per cent, so that the ratio of exports to production has declined from 27.6 per cent in 1916, to 12.4 per cent in 1922. The ratio of demand in this country to domestic supply has been steadily rising, and since 1919 we have consumed in the aggregate a greater volume of refinery products than was manufactured from the output of domestic wells.

International Aspects

Although the United States has been the principal producer of petroleum since 1902, and in recent years has supplied about two-thirds of the world's output, this supremacy is by no means an index of the relative size of this country's oil resources. Early in 1922 David White estimated the reserve supply of the world at 70,000,000,000 bbls., and that of the United States at slightly more than 9,000,000,000. This means that in 1921 this country's supply was being depleted at an annual rate of more than 5 per cent, and that of the rest of the world at less than one-half of one per cent. The increased production and the shrinkage of the reserves in the United States since 1921 would, of course, make the present rate of depletion even more striking.

It is becoming increasingly evident that within a few years either our consumption of oil products must be greatly curtailed or we must become dependent on other countries for the greater part of our requirements—not because of the immediate exhaustion of our oil resources, but because of the impossibility of maintaining our present rate of output without an investment in new wells and equipment which is out of the question so long as oil prices remain near their present levels.

The impending decline of American production, the increasing dependence of industry and commerce upon an adequate supply of oil for fuel and lubricants, and the fact—brought out by the war—that petroleum is now a military necessity, have given rise to a great international struggle for political and commercial control of the world's resources, and have caused the United States to take an active part in that effort. Petroleum has probably played a more important role in international politics in the last 15 years than any other commodity.

From the standpoint of American interests, the outstanding features of the contest for the control of the world's reserves have been the rivalry between American and British-Dutch companies for concessions in foreign fields, particularly in the Near East, and the efforts on the part of certain countries to nationalize their oil resources in order both to conserve their supplies and to prevent foreign control. The most conspicuous examples of this practice have occurred in Russia and Mexico. The Mexican constitution of 1917, which provided that "in the nation is vested direct ownership of all minerals, petroleum and hydrocarbons," was held by American oil operators to amount to confiscation, and the resulting controversy greatly delayed the resumption of diplomatic relations between the Mexican and American governments. Under the terms of the recent agreement, subsoil rights acquired by American oil companies prior to the adoption of the new constitution in 1917 are recognized.

The Long-Term Prospect

The fundamental fact in the petroleum situation is that oil is a "wasting asset;" and the unmined reserves in this country have been so greatly depleted that the indicated approach of approximate exhaustion cannot be ignored. It is now believed that most of the domestic resources have been so thoroughly tapped that the expansion of output cannot continue much longer and that the near future will witness the beginning of the inevitable decline.

There is nothing in this condition to occasion immediate alarm. The worst that may be expected in the measurable future is an increasing reliance in this country upon foreign oil reserves, and ultimately higher prices. Fortunately, the known world deposits are ample for prospective needs for many years to come, and future discoveries may add greatly to the available resources. Meanwhile, against the rapidly expanding requirements may be placed possible new processes and inventions which would introduce hitherto unknown economies in the preparation of petroleum products and in their utilization.

These considerations do not, however, justify a heedless and premature exhaustion of a leading natural resource, but indicate the necessity of a progressive adaptation of the industry to the nation's current economic requirements, with a reasonable regard for the welfare of future generations.

OIL RATE ADVANCE DENIED

WASHINGTON, Oct. 1.—The proposal of the Chicago & North Western Railroad to increase its rates on crude, fuel and gas oils, in car loads, barrels or tank cars, from producing points in the Mid-Continent Field to points of consumption in Nebraska and western South Dakota has been held by the Interstate Commerce Commission to be not justified, and schedules carrying the increased rates ordered canceled, on or before October 28.

ASKS NATURAL GAS FRANCHISE

SHREVEPORT, La., Oct. 1.—The Agurs Gas Co. of Agurs, La., has applied for a natural gas franchise. W. C. Agurs, president of the company, says he expects to obtain gas from the Palmer Corp.

Statement of the Ownership, Management, Etc., of THE OIL AND GAS JOURNAL October 1, 1923

(This statement is published in compliance with Act of August 24, 1912.)

Published weekly (Thursday) at Tulsa, Okla.

Publisher, The Petroleum Publishing Co., Tulsa, Okla.

Editor, James McIntyre, Tulsa, Okla.

Associate Editor, W. T. Anderson, Tulsa, Okla.

Associate Editor, Andrew M. Rowley, Tulsa, Okla.

Stockholders holding 1 per cent or more of total amount of stock: The Patrick C. Boyle Estate, Oil City, Pa.

Known bondholders, mortgagees and other security holders, holding 1 per cent or more of the total amount of bonds, mortgages or other securities: None.

H. J. BRYAN,
Treasurer.

Sworn to and subscribed before me this 1st day of October, 1923.

MARIE H. TURNER, Notary Public.

My commission expires October 12, 1926.

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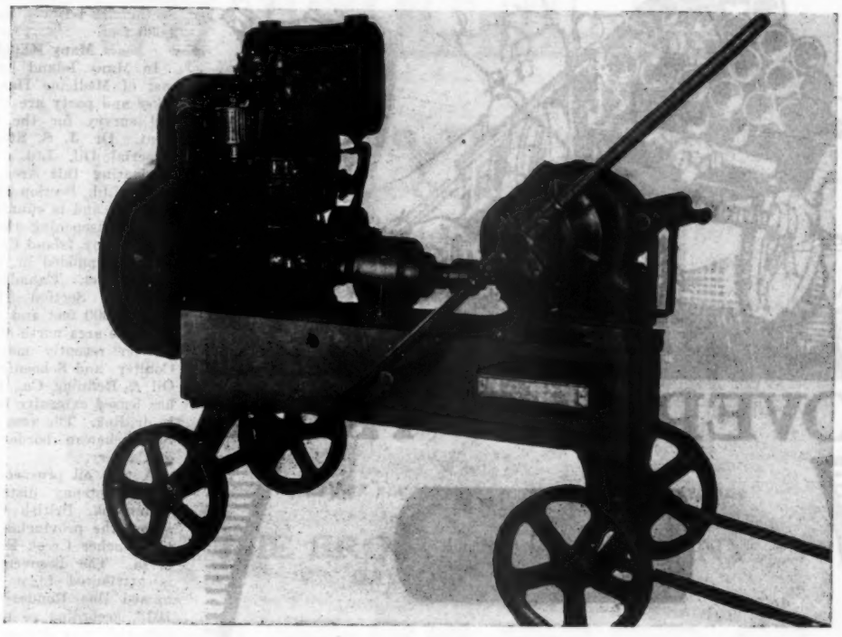

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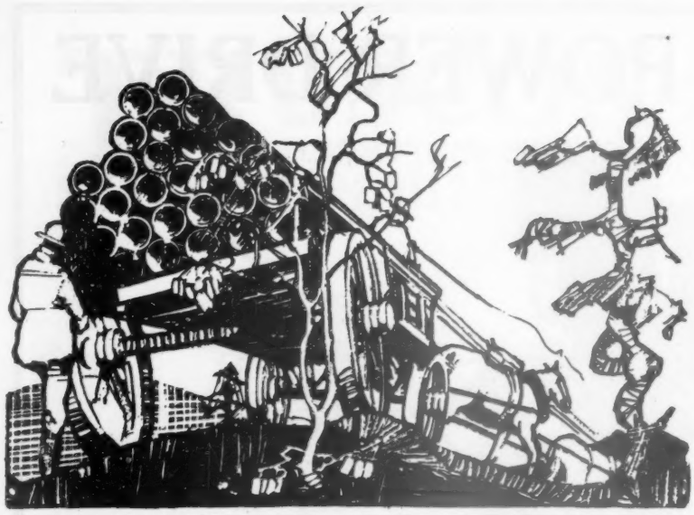

"OVER THE TRAIL"

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CANADIAN FIELDS

(Continued from Page 56)

Lethbridge Oil, Ltd., is reported arranging with the backers of Coutts-Sweetgrass Oils, Ltd., for a merger of the two companies, to be followed by completion of the unfinished Baalin well on Section 12-1-15w-4, now shut down at 2,030 feet.

Many Island Survey

In Many Island Lake district, northeast of Medicine Hat, Dr. E. J. Whittaker and party are completing a geological survey for the Dominion Government. Dr. J. S. Stewart, geologist for Imperial Oil, Ltd., has also been investigating this area. Community Oil Wells, Ltd., Section 19-14-1w-4, has been reopened and is running casing, preparatory to deepening the test below 2,470 feet. Many Island Oil & Gas Co., which recently spudded in, is reported drilling at 235 feet. Canadian-American Oil & Gas Co., Section 31-13-1w-4 is down about 1,300 feet and cementing casing.

In the area north of Many Island Lake district recently mapped by Geologists Coulter and Schoenfelt for the Canadian Oil & Refining Co., the latter company has leased extensive holdings preparatory to drilling. The area lies on the Alberta-Saskatchewan border, almost due east of Calgary.

A new oil prospect is shaping in the east Kootenay district, not far from Cranbrook, British Columbia, and just across the provincial boundary from the old Pincher Creek Field of southern Alberta. The discovery of oil indications is attributed to a veteran prospector, named Ben Rondeau. As far back as 1913, according to the story, Rondeau's attention was drawn to an oil-saturated stump, but he decided someone must have spilled the oil. A few weeks ago, on thinking over the incident, he decided to investigate, and found a small seepage in a marsh, where oil lay on the water, but not in quantity. Later, on the bank of Findlay Creek, not far from the oil-saturated stump of 1913, he found a bit of swampy ground that fairly reeked with oil, and further on discovered several large seepages. Rondeau staked a claim and brought to Cranbrook a sample of the oil in a bottle. The oil, skimmed from the surface of the water with an ordinary camp cup, is stated to be a clear white product, resembling distillate in appearance and odor. Cranbrook men are reported staking claims and planning commercial development.

Ontario Field

In the Ontario Fields, Union Natural Gas Co. No. 248 deep test on the old Truckenbrod farm, near Port Alma, is reported drilling at 600 feet. The Glenwood Natural Gas Co. deep test on the Hugh Shanks farm is drilling at 2,600 feet near the top of the Trenton limestone. In Lambton County, Coste & Co. No. 4 deep test, Dawn Township, is drilling at 2,975 feet and has not yet reached the top of the Trenton limestone. Coste No. 5, Moore Township, is drilling at 700 feet. In this test the big lime, usually encountered at 262 feet in the Tilbury Field, was met at 647 feet. At Rock Glen, near Arkona, the High Pressure Oil & Gas Co. No.'s 2 deep test is drilling around 1,000 feet. The Canadian Dutch Oils, Ltd., is continuing shallow drilling operations on the Plympton-Warwick town line, where a small oil showing was recently encountered around 400 feet in No. 1 well. No. 2 is drilling about a half a mile east of No. 1.

PETROLEUM EXPOSITION OPENS MONDAY

(Continued from Page 63)

in the list are the Southwestern Business Congress, the Mid-West Section of the National Purchasing Agents' Association, the Western Refiners' Association, the Institute of Petroleum Technologists, the Oklahoma Oil Jobbers' Association, the Mid-Continent Oil & Gas Association, the Association of Natural Gasoline Manufacturers, the Mid-Continent Section of the American Institute of Mechanical Engineers, the Mid-West Section of the Retail Credit Men's National Association, the Retail Credit Men's Secretaries, the Oklahoma Technical Club, the Standardization Committee of the Mid-Continent Oil & Gas Association, the State Junior Chamber of Commerce, the University of Kansas alumni and the alumni of the Oklahoma A. & M. College.

Great Northern R. R. Takes Sunburst Oil For Fuel Purposes

CASPER, Wyo., Sept. 29.—The fuel oil problem that has hung about the neck of the operators in the Sunburst Field like a millstone, has been solved through the efforts of L. C. Stevenson, chairman of the board of directors of the Sunburst Oil & Refining Co. and the Great Northern Railroad. At a conference held the past week, Chairman Stevenson made arrangements for the delivery to the Great Northern of all the fuel oil made or produced by his company for fuel purposes and the railroad officials announced after the meeting the road would take all the oil offered for fuel oil up to what is considered the amount produced in the Sunburst Field.

Ralph Budd, chairman of the Great Northern, stated further that the railroad was changing its coal burning engines over to oil burners on all divisions where fuel oil would be available. The capacity of fuel oil at the Sunburst refinery at Great Falls is about 1,500 bbls. daily when the plant is running to capacity and Mr. Budd stated that the railroad would take double that amount if the oil was available.

Experiments carried out by the Great Northern engineers show that fuel oil is much cheaper than coal for the use on the locomotives and the road is now shipping considerable of the heavy crude from Shelby to Cut Bank, the division point nearest Shelby on the west. The oil is tanked at Cut Bank with standpipes located close to the tracks for loading direct to the tender tanks on the engines.

MICHIGAN CITY, IND., WELCOMES NEW PLANT

Describing the new plant of the Sullivan Machinery Co. in Michigan City, Indiana, the Michigan City News says:

The plant in Michigan City, representing an outlay of over $1,000,000, is unique in itself. It covers many acres of ground south of the Pere Marquette Railroad west of Woodland Avenue. The plant was begun in July, 1921. A tunnel system carries all piping and wiring underground—an added measure of safety and efficiency. Nine great 10-ton cranes within the shops can transfer the heavy machines under process of completion to any other part of the plant within a minute or two. Cars of material, switched from the railroad nearby, can be run directly into the shops and, by the use of the cranes, taken to the various departments.

The Sullivan Machine Co. was organized in Claremont, N. H., in January, 1869, taking its name from Sullivan County, in which the town is located. In 1892 the company was combined with the Diamond Prospecting Co., an Illinois corporation that had been its selling agents, and the Sullivan Machinery Co. formed. In 1902 the M. C. Bullock Co. of Chicago was incorporated in the Sullivan Corp., and the Bullock plant became the western manufacturing unit and continued to be until the Michigan City plant was completed and the equipment moved.

The principal plant is at Claremont, N. H., where a force of 1,200 to 1,500 men is employed, and it is the hope of the management that before many years the Michigan City plant will be as large as that in the East.

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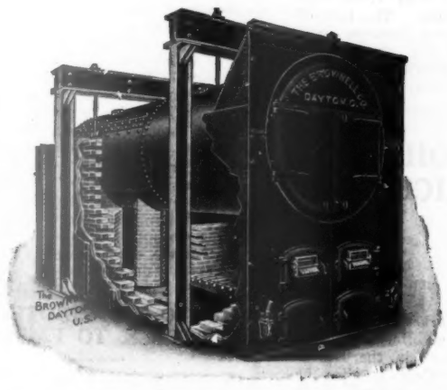

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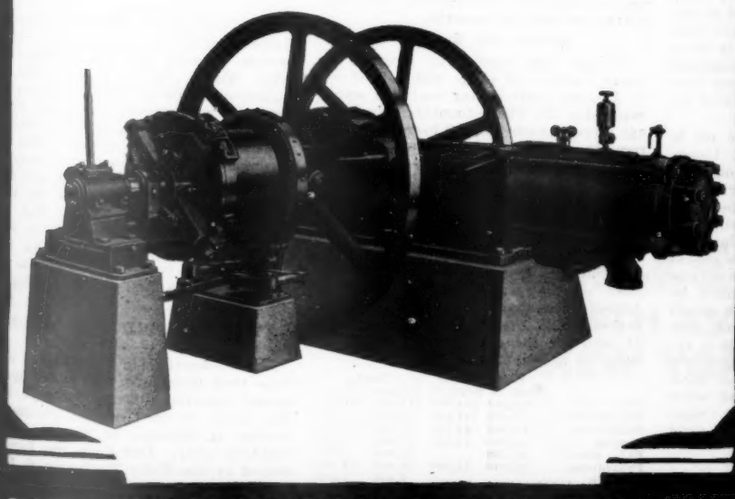

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REFINING AND MARKETING SECTION

Greatest Gasoline Stock in California Ever Held at a Time

The indicated consumption of California gasoline, including what is used domestically and that exported from the State, dropped off 35.3 million gallons during August compared with July, according to the statistics just released from the San Francisco office of the United States Bureau of Mines.

Although the production for August also dropped off 12.1 million gallons, the production decline was more than offset by the big drop in consumption, and stocks rose to a new high level of 153.6 million gallons.

This is the greatest amount of gasoline stock ever held at one time in California. With the product retailing in the Los Angeles district at 13 cents a gallon, the lowest in 10 years, and the seasonal peak of consumption apparently having passed prematurely, it is generally conceded that western refiners are going to experience a very trying winter.

At present prices there is very little margin of profit to the refiner. It costs about 1½ cents a gallon to carry gasoline from outlying refineries into the city of Los Angeles and another 1½ cents to distribute it to the service station. The upkeep and maintenance of "company owned" service stations is running from 3½ to 5 cents a gallon, according to the type of service rendered. At an average of 4 cents for service station maintenance, there is less than 3 cents left as a refinery realization under present conditions.

It is hardly likely that the big companies will initiate any further cuts in the retail price. It is considered that if the stocks continue to pile up during the winter and fall that there will be a curtailment of production and a general shutting down of plants.

Announcement was made by the Standard Oil Co. that commencing October 1, and so long as the new California gasoline tax law (Bill 744) continues in effect, the company will include the amount of the prescribed tax of 2 cents in the price of each gallon of motor vehicle fuel sold and delivered by it in the State, except on such fuel sold and delivered to the United States Government, or for export, and on kerosene.

Several of the major independents have unofficially signified their intentions of following the same procedure.

SINCLAIR CO. BUILDS TUNNEL UNDER RIVER

CHICAGO, Oct. 1.—At the point where the pipe lines from the Mid-Continent Field pass under the Calumet River, the Sinclair Refining Co. has completed a tunnel that is designed to care for all the present and possible pipe lines. The Calumet River is included in the Greater Calumet region which it is planned will be a great steel manufacturing center as it includes the purchase made by the Jones & Laughlin Co. of Pittsburgh for its new western plant covering a site of 640 acres. The immense engineering and construction work includes the deepening of the Calumet River to permit of the entry of deep draft vessels and the Sinclair Refining Co. realized that its pipe lines would be in constant danger of being broken during the deepening of the river and the subsequent dredging which would be necessary to maintain a depth of 20 feet or more.

To meet this possibility of future interruption to its supply of crude, the Sinclair Refining Co. has constructed a tunnel that is 300 feet in length and 60 feet below the surface and 24 feet below the lowest point to which the river bottom can be drilled. This tunnel has a diameter of seven feet and is calculated to meet any possible growth of the refinery at this point. The Sinclair Refining Co. is also planning the construction of a second tunnel of even greater size at a point a short distance from the one which has been completed and bids are now being considered for the work.

REFINERY CHANGES NAME

WICHITA FALLS, Texas, Sept. 30.—The Swastika Refining Co., a small plant with a daily capacity of 300 bbls., located in the new field near Olney in Archer County, Texas, has changed its name and elected new officers under the name of the Home Refining Co., and is running full capacity with crude from the wells in the vicinity. The new officers are Judge Charles Spencer, president; C. D. Rudd, vice president, of Wichita Falls; and George Manross, of Wichita Falls, has charge of the plant.

EASTERN DEMAND FOR HEAVY OILS WHILE GASOLINE PRICES SAG

By N. O. Fanning

NEW YORK, Oct. 1.—No doubt the most important feature of the Eastern refined oil markets is the introduction of the new product of petroleum, furnace oil, for use in home oil burners. Of course, its use is still very limited, as compared with the other oil products. Nevertheless, the sale of the product is expected to have an effect on market conditions and prices this winter. The firmness of the Eastern kerosene market is attributed to the demand for furnace oil.

Furnace oil is halfway between gas oil and kerosene in gravity. The product sold by the Standard Oil Co. of New York averages around 41 gravity, but each concern manufactures it according to its own specifications. It now costs 10 cents per gallon, delivered in tankwagon lots of 250 gallons or more. It is sold more commonly in lots of 1,000 gallons and up. Most of the leading marketers now stand ready to make contracts for supplies to last a year.

Public Demand Insistent

Although furnace oil is now available in this district, the big oil refiners are not endeavoring to push sales of the product. Its creation has been due entirely to the insistent public demand for oil burning equipment for use in home furnaces. The oil companies have been reluctant to accede to this demand as the supply of oil, in their opinion, has been uncertain until recently. There is little question that furnace oil can be supplied indefinitely, yet, it is difficult to see how unless crude oil output is stimulated by higher prices.

While the demand for furnace oil is steadily gaining on the Atlantic Coast, consumption of kerosene, gas oil and bunker oil has also increased during the last month. The result is that local refiners have been increasing their purchases of heavy crude oil, particularly, in Mexico. It is strange that refiners should have difficulty in procuring heavy oils under present conditions. It would be still more remarkable if heavy oils should come into greater use than light oils, and therefore be more expensive. This is entirely possible if the price of gasoline stays low, and the consumption of kerosene, furnace oil, bunker oil and other heavy products keeps increasing—especially so, if the big fields continue to yield high grade oils.

Gasoline Prices Sag

Gasoline now sells on a tank wagon basis for 18½ cents at New York, and if this market sags to a further extent, as it has in the Middle West, gasoline may be as cheap as kerosene, which has held steady around 14 cents, tank wagon basis. Under such conditions, gasoline will cease to be the dominating factor in the petroleum markets.

The tank car market is somewhat firmer. California gasoline has never proved as big a factor in the Eastern markets, as little straight gasoline has been shipped. Gasoline refined in the East from California crude is a different matter. Mid-Continent gasoline is more plentiful here now and can be delivered in tank car lots at a cost of about 10½ cents per gallon. California gasoline might be brought in as cheaply, but practically all the tanker tonnage available for the trade is occupied in bringing either crude oil or fuel oil.

Export Market Uncertain

Local refiners have enjoyed a good export business this year, but the big gain in shipments reported by the Department of Commerce bears out their fears that California would flood the foreign markets with cheap oil. Most of the increase in exports has been accounted for by the Pacific Coast. The Dutch-Shell combine is said to have been a large factor in the shipping of cheap California products abroad, especially, indirectly by exporting crude to their Mexican refineries.

The foreign markets have been pretty heavily stocked with gasoline and fuel oil, and it is possible requirements will drop during the next few months.

Eastern Oil Receipts

A new high mark was recorded in water receipts of crude and refined oil at Atlantic ports during the week ended September 28. The estimated daily average receipts were 592,000 barrels. Larger receipts were recorded from the Gulf Coast, Pacific Coast and from Mexico. Receipts at New York were 289,000 barrels per day. Large receipts of oil by water were reported at Baltimore, principally from the Pacific Coast.

The following table shows estimated daily average receipts of crude and refined oil by water at the principal Atlantic Coast ports for the week ended September 28, the week ended September 21, and for the months of August and July (in barrels):

	Week Ended		Month	
	Sept. 28	Sept. 21	August	July
New York	289,000	164,000	214,000	214,000
Philadelphia	74,000	144,000	110,000	92,000
Baltimore	63,000	44,000	33,000	27,000
Boston	41,000	11,000	24,000	15,000
Fall River	41,000	.....	19,000	9,000
Providence	39,000	21,000	23,000	19,000
Norfolk	.....	.....	8,000	9,000
Charleston	4,000	5,000	13,000	14,000
Miscellaneous	41,000	11,000	13,000	15,000
Ttl daily av.	592,000	410,000	456,000	414,000

The supply of Panuco crude continues plentiful, but light southern Mexican crude is increasingly scarce. Prices are unchanged.

PREPARING FOR TEXAS ANTI-TRUST TRIALS

AUSTIN, Texas, Oct. 1.—Judge R. L. Batts, counsel of the Gulf Refining Co., and Col. Frank Andrews and E. E. Townes of Houston, legal representatives of large refining companies, conferred with Attorney General W. A. Keeling on details of the State anti-trust suits, set for hearing in Travis County courts against four refining companies. Attorneys conferred on agreement over statements of facts and other matters to save time and costs during the trial.

The State will be represented by Attorney General Keeling, First Assistant John C. Well, and Assistant Attorney General Frank Kemp. The anti-trust suits, for forfeiture of charter and franchise, are against The Texas Co., the Gulf Refining Co., the Humble Oil & Refining Co. and the Producers Refining Co., a Kansas concern with Texas headquarters at Fort Worth.

GULF TO DISTRIBUTE STOCK TO EMPLOYES

HOUSTON, Texas, Oct. 1.—The Gulf Oil Corp. of Pennsylvania has alloted stock to be distributed among the employes of that company and its subsidiaries, including the Gulf Production Co., Gulf Refining Co., Gulf Pipe Line Co., Gypsy Oil Co., in Oklahoma and the Mexican Gulf Co., in Mexico.

The employes will be permitted to subscribe to amounts limited to 20 per cent of their wages or salaries and the company will contribute 50 per cent.

The plan becomes effective October 1 and will continue in operation for five years. Employes who have been with the various allied interests for one year will be allowed to participate. The funds will be administered by five trustees to be appointed by the board of directors of the Gulf Oil Corp. Two funds will be established, known as Class A and B. The installment payments by the employes will be into Class A and those of the corporation into Class B. No stock will be alloted at less than par.

P. & R. INSTALL DUBBS PROCESS

The Producers & Refiners Corp. has started operating units of the Dubbs process at both its Parco, Wyo. and West Tulsa, Okla. plants. The installations of these widely known cracking units was recently completed by the Universal Oil Products Co., Chicago, owners of the Dubbs process. The Producers & Refiners also recently completed the final link in its pipe line, extending to its new 10,000-bbl. plant at Parco from the Salt Creek Field. The same company also recently completed a 30-mile pipe line from the Wewoka Field in Oklahoma connecting with its line from the Lyon's Pool to West Tulsa.

TWO REFINERIES TO RESUME

Two refineries in Oklahoma which have been shut down for some time resumed operations during the past week. The plant of the Navajo Refining Co., located at Sapulpa, is running around 800 bbls. daily. This plant was formerly owned by the Polar Producing & Refining Co., and was recently taken over by L. B. Jackson and associates. The plant of the Pauline Refining Co., located at Beckett, near Duncan, Okla., has also resumed operations. It has a capacity of 1,200 bbls. and is understood to be running 500 bbls. daily.

The Atlantic Refining Company are installing The Sharples Process at their refinery in Philadelphia, Pennsylvania

Sharples-made Bright Stock has a cold test below 25.

MAX B. MILLER & CO. Inc.
501 FIFTH AVENUE
NEW YORK

Cracking of Mid-Continent Fuel Oil

Dubbs Process Is Described by Expert Who Declares the Coke Obtained Has Industrial Value of Magnitude

By Gustav Egloff
Director Research Laboratories, Universal Oil Products Company, Chicago, Ill.

The commercial cracking of fuel oil has been the most difficult problem in the whole oil industry to solve, due to its high coke forming properties. Fuel oil has the lowest economic value of any fraction of crude oil, hence its conversion into yields of over 40 per cent gasoline, commercially is an industrial achievement of profound significance. This achievement is now a daily routine in oil refineries using the Dubbs cracking process.

In view of the tremendous quantity of fuel oil available from the distillation of Mid-Continent crude oil suitable only for fuel purposes, a real shortage of gasoline cannot occur due to the fact that it can be converted into high yields of gasoline, economically. The many predictions of the past sixty years of crude oil shortage and latterly gasoline selling for one dollar a gallon are pure speculation without any foundation in fact. For, it is true that the oil industry has fulfilled any and every demand made upon it for commercial products during its sixty odd years of existence in the United States.

Typical commercial runs are shown of fuel oil cracking which yielded percentages of gasoline of 40.14 to 42.67 produced against the oil treated.

Mid-Continent Fuel Oil

The Mid-Continent fuel oil used for cracking stock was typical of that obtained in refineries and ranged in Baume gravity from 23.5 to 25.4. It was the residual oil after the gasoline, kerosene and gas oil had been topped off by means of tower stills.

The primary products from the cracking reaction are as follows:

1. Pressure Distillate Oil (Crude gasoline)
2. Residuum (Pressure tar)
3. Coke
4. Uncondensable gas.

Pressure Distillate Oil

The pressure distillate produced, during the nine runs made in one of the commercial plants using the process, represented from 61 per cent to 68.8 per cent of the fuel oil cracked having a Baume gravity of 50.7 to 54.1.

Residuum Oil or Pressure Tar

The residuum oil or pressure tar resulting from the cracking reaction is an excellent fuel oil having superior qualities to the fuel oil from which it was derived. The viscosity and cold tests are lower than the fuel from which it was obtained, which is a highly important factor in cold weather for it does away with the need of blending with gas oil or kerosene bottoms so as to meet specifications as to viscosity and cold test. Another important quality of pressure tar is the higher heat units it contains per gallon over the fuel oil used as cracking stock.

The Baume gravity of the pressure tar ranged between 13.6 and 16.4 and the percentage against the charging stock was between 25.30 and 36.04.

The pressure tar instead of being utilized as fuel for combustion purposes may be coked by flashing into vapor by dropping the pressure at the elevated temperature of the cracking still, as it passes into a coking still. The vapors resulting from the pressure tar are condensed and may be used as cracking stock alone or by blending with fuel oil charging stock.

The coke formed during the cracking reaction is deposited outside of the heating zone, in large reaction chambers. The quantity produced per run was between 16.1 and 26.07 tons, depending upon the amount of fuel oil cracked. These quantities calculated upon a percentage basis by weight of the oil cracked showed from 5.41 to 7.79 converted into coke.

The coke formed is dry and highly suitable for fuel purposes, and in some cases suitable for metallurgical purposes when the sulphur content is low.

Although coke formation has been looked upon as the insurmountable factor in the cracking of heavy oils and to be carefully avoided, yet this viewpoint eliminated vast quantities of cracking stock of high coke forming quality. This viewpoint left out the economic value of the coke which would be produced from the cracking of fuel oil. As an industrial factor the production of coke has an economic value of importance, having a substantial market value per ton and finding a ready sale as domestic or commercial fuel.

In the nine typical commercial runs submitted a total of 19,022 bbls. of fuel oil was cracked producing 192 tons of coke or at the rate of one ton per 100 bbls. of fuel oil converted into 41.5 per cent gasoline.

The market value of the 192 tons of coke approximates $1,900, or at the rate of approximately 10 cents for each barrel of fuel oil cracked.

It is significant to note that the coke produced has a very low ash content, particularly when compared to coal coke. The heat units of the coke produced from cracking averages approximately 15,500 B. t. u.'s per pound and when one remembers the accepted standard of coke made from Connelsville coal has a B. t. u. value of 12,600 and Solvay coke (of very good grade) a content per pound of 13,300 B. t. u., hence coke made from cracking fuel oil has approximately 16.5 per cent more heat units than coke made from coal. The coke which heretofore has been looked upon as the bete noir of cracking, becomes an economic advantage in that fuel oils are converted into high yields of gasoline producing coke having industrial value of magnitude.

The uncondensable gas produced during the runs cited was burned in the cracking furnaces. The gas makes an excellent fuel being high in B. t. u.'s per cubic foot. The gas will approximate 1,300 B. t. u. per cubic foot as an average.

There are other uses to which the uncondensable gas may be put such as conversion into alcohols, glychols, acetates, chlor hydrins, carbon black and for welding purposes.

Pressure Distillate Oil

The pressure distillate oil is usually treated with sulphuric acid, caustic soda, sodium plumbite, water washed and steam or fire distilled or both into water white, stable gasoline. The other products are kerosene and gas oil. At times only the gasoline is distilled off and the bottoms called gas oil may be recracked by blending with fresh charging stock or sold, as it has a higher market value than the fuel oil charging stock.

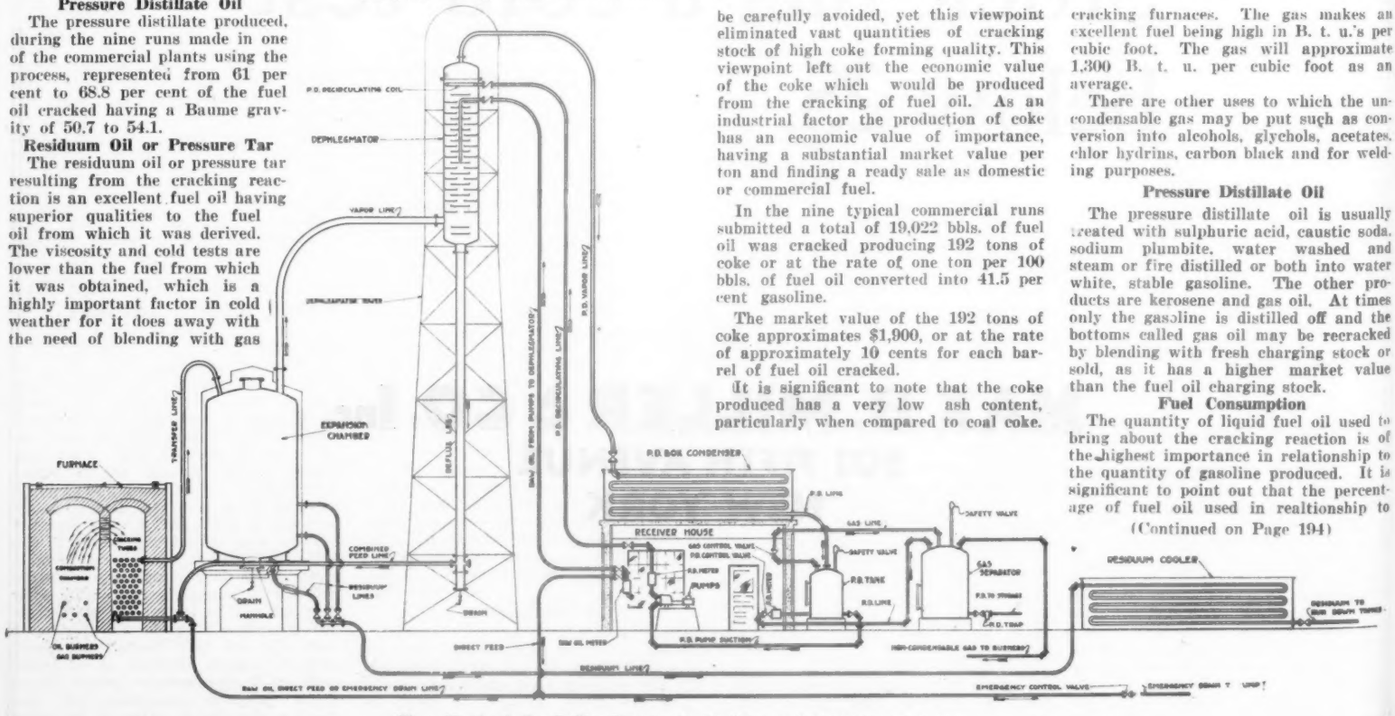
Fuel Consumption

The quantity of liquid fuel oil used to bring about the cracking reaction is of the highest importance in relationship to the quantity of gasoline produced. It is significant to point out that the percentage of fuel oil used in realtionship to

(Continued on Page 194)

MID-CONTINENT FUEL OIL RUNS—SUMMARY

Runs No.	1	2	3	4	5	6	7	8	9
Hours fire to stream	5.25	6	7.5	7	5.75	6.25	8	5	6.5
Hours on stream	81	120	97.25	122	126	124	121.75	120.5	114.5
Pressure used, lbs.	140	140	140	140	140	140	140	140	140
Fuel Oil, bbls. cracked	1,646	2,214	1,755	2,194	2,314	2,210	2,292	2,248	2,119
Baume Gravity	23.5	24.4	25.2	25.3	25.3	25.0	24.8	25.2	25.3
Barrels per day cracked	488	443	441	432	441	428	452	448	444
Primary Products From Cracking									
Pressure Distillate Oil, bbls.	1,001	1,351	1,117	1,437	1,491	1,125	1,502	1,520	1,458
Baume Gravity	53.0	53.4	54.1	52.0	52.8	52.0	51.6	50.7	51.7
Per Cent	60.81	61.01	62.60	65.50	64.43	64.49	65.54	67.6	68.82
Residual Oil, bbls.	593	761	577	655	722	689	668	698	536
Baume Gravity	14.8	14.6	15.0	16.4	15.1	15.5	14.5	13.6	14.1
Per cent	36.04	34.38	32.34	29.85	31.21	31.19	29.16	27.03	25.30
Uncondensable Gas and Coke, bbls.	52	102	91	102	101	96	122	120	125
Per cent	3.15	4.61	5.06	4.65	4.36	4.32	5.30	5.37	5.88
Coke, tons	16.1	19.0	16.4	21.6	21.1	24.3	23.62	23.71	26.07
Products From Pressure Distillate Oil Percentages Calculated Against Fuel Oil Cracked									
Gasoline, per cent	40.56	40.14	42.25	41.27	41.88	40.76	41.95	42.25	42.67
Baume Gravity	58.4	58.4	58.7	58.0	58.0	57.6	57.7	57.4	57.8
Kerosene, per cent	3.95	3.05	2.50	1.64	1.93	3.22	0.98	2.03	3.10
Baume Gravity	41.5	41.5	41.5	41.2	41.5	41.4	41.2	41.0	41.7
Distillate, per cent	7.78	9.27	9.08	13.43	11.60	11.48	13.44	13.86	13.42
Baume Gravity	37.8	38.0	38.6	37.8	38.0	37.6	38.0	37.8	37.6
Gas Oil, per cent	6.08	5.49	5.63	5.89	5.80	5.81	6.55	7.03	6.47
Baume Gravity	33.5	32.0	33.4	32.8	33.0	32.7	32.5	31.06	32.0
Percentage of Yield Based on Raw Oil Charged									
Gasoline	40.56	40.14	42.25	41.27	41.88	40.76	41.95	42.25	42.67
Kerosene Distillate	3.95	3.05	2.50	1.64	1.93	3.22	.98	2.03	3.10
Distillate	7.78	9.27	9.08	13.43	11.60	11.48	13.44	13.86	13.42
Gas Oil	6.08	5.49	5.63	5.89	5.80	5.81	6.55	7.03	6.47
Fuel Oil	36.04	34.38	32.34	29.85	31.21	31.19	29.16	27.03	25.30
Uncondensable Gas and Carbon	3.15	4.61	5.06	4.65	4.36	4.32	5.30	5.37	5.88
Loss	2.44	3.06	3.14	3.27	3.22	3.32	2.62	2.43	3.16
Fuel Consumption									
Fuel, per cent by volume	2.43	2.32	3.1[illegible]	2.07	1.12	1.52	3.15	1.19	1.07



Flow Chart of the Dubbs Process of Cracking Mid-Continent Fuel Oil

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So we can do our work in half the time it used to take before.
Respectfully yours,
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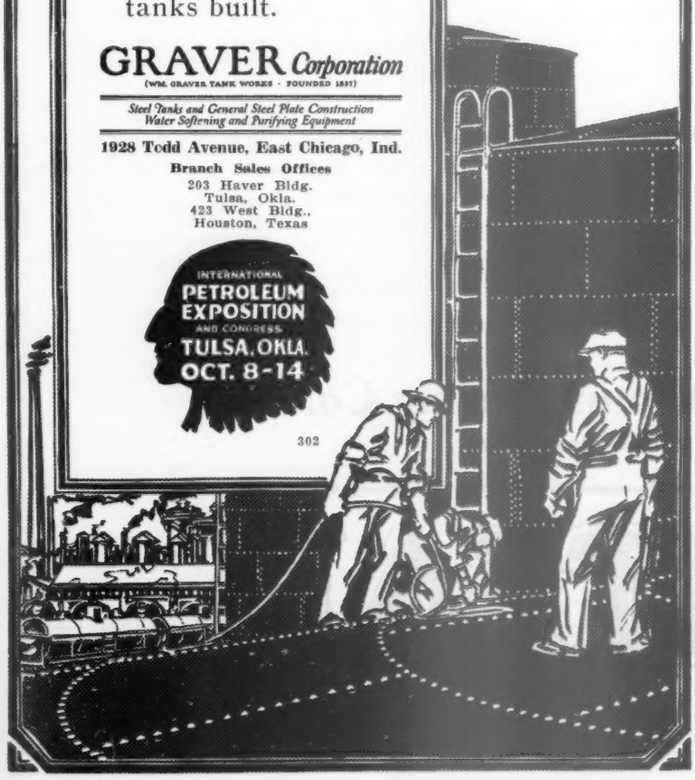

CENTRAL WEST

(Continued from Page 62)

from railroad facilities. This company, along with the Wiser Oil Co., holds a large acreage in the eastern part of the State, in fact, in most all the prominent fields, and does not confine itself to inside development, but has been great wildcatters, like the Union Gas & Oil Co.

The Petroleum Exploration Co. also drilled in a 10-bbl. pumper in No. 31 on the Abe Caudill farm, also in the South Weir Field of Magoffin County.

In the North Weir Field of Lawrence-Johnson Counties, the Union Gas & Oil Co. reports two completions. Its No. 22 on the P. P. Holbrook farm near the company's big camp at Ayresville, came in with 80 bbls. and considered far above the average Weir well. The same company's No. 4 Laura Skaggs, same field, showed 30 bbls. With the completion the previous week of a 100-bbl. Weir sand well in No. 15 on the Proctor Sparks farm, and a 75-bbl. well in No. 20 Sanford Lyon farm, this company is boosting its daily production in excellent shape, and its production with a few more wells of this kind, should reach the 100,000-bbl. a month mark, and the vast acreage held only scratched. After a shut down of a few months, this company is getting active again and General Superintendent Ed Holland and the whole force of the field men are kept on the move.

In the South Weir Field in Johnson and Magoffin Counties, a few nice completions are reported outside of those of the Petroleum Exploration and Wiser Oil Co.'s. R. G. Gillespie's No. 2 on the Tollie Conley is reported at 10 bbls. S. D. Wheeler, trustee, drilled in Nos. 7 and 8 Frank Conley 200-acre farm for 25 and 10 bbls. The Atlantic Oil Producing Co. drilled No. 7 on the Henry Cantrell 40 acres and No. 5 on the Henry Cantrell east 40 acres, both being good for 10 bbls. each. C. W. Wheeler and others' Nos. 5 and 6 A. J. Tackett are estimated at 10 bbls. each. These wells are in the Paintsville area, as is the entire South Weir Field, while the North Weir Field is in the Louisa district.

In Wayne County, Charles Lockart drilled in a second test on the Albert Phipps farm, which was dry. Dr. Doolittle and others are drilling a test on the Francis and Baker farm, and the Superior Oil Corp. is drilling No. 28 Bennett heirs farm.

In the Slade district, Powell County, the Petroleum Exploration Co.'s No. 7 Robert Boyd, shows for 10 bbls.

In Lee County, the Lee Land Oil Co.'s Nos. 16, 17 and 18 A. H. Warner farm, are good for 3 bbls. each, and Nos. 19 and 20 same farm, 2 bbls. each.

The Petroleum Exploration Co. made good time in the construction of its carbon plant at Ida May, Lee County, Kentucky. Work started in April, and it was fully completed and operating on September 18. The work was under the supervision of General Manager George S. Bradfield and in direct charge of G. W. Davisson, who has been in the carbon black business for more than 20 years. Approximately 200 men were employed in building the plant. Those familiar with the carbon black industry who have visited Ida May, state the company has one of the most modern plants of its kind in the country.

The carbon black plant is located in the hills of Lee County, Kentucky, at the end of the branch line of the Louisville & Nashville Railroad, which runs from Heidleburg to Ida May, a distance of about 2½ miles. Gas for the carbon black plant is piped from Owsley County, a distance of 6 miles. Over 3,500 acres being developed by the Petroleum Exploration Co. will, in all likelihood, be productive, as the tract has been tested on all sides. Six wells at present are furnishing several million feet of gas daily and a warehouse has been constructed and a telephone system installed between the field and the plant.

EASTERN FIELDS

(Continued from Page 62)

district, Cabell County, West Virginia, are coming in light producers. One and a half miles north of Beckett Station, the Mid City Gas Co. has a light salt sand gasser at a test on Alfred Swann farm. In same district, on Charley's Creek, J. B. Harshbarger & Co. drilled No. 3 on the Andrew Conner farm through the Cow Run sand, showing for a light pumper. Cabell County has more new work than at any time in years. On Panther Run of Enoch's Fork, Reedy district, Wirt County, the Brown Farm Oil Co. has drilled No. 4 on the Holly Kelley farm through the Berea grit and dry. On Fish Pot Run, Union district, Pleasants County, H. P. Galiaher has completed and shot in the Keener sand a test on the Robert Brewer farm for a 2 or 3-bbl. pumper. In Lafayette district, the American Oil Development Co. has a show for a 4-bbl. pumper in the salt sand at No. 4 on the S. M. Bumgardner farm. On Indjan Creek, Murphy district, Ritchie County, the Maxon Oil Co.'s second test on the E. C. Darks farm is a gasser in the Big Injun sand. On Reedy Creek, Curtis district, Roane County, Robert D. Cummin's test on the P. H. Milpoan farm, is a 3-bbl. pumper in the stray sand. In the St. Mary's district, Pleasants County, the owners of the wells on the Hentzelman, have installed an air compressor and more than doubled production.

In DeKalb district, Gilmer County, the Hope Natural Gas Co. has a show for a producer in the Big Injun sand at a second test on the F. C. Gainer farm. In Sheridan district, Calhoun County, Godfrey L. Cabot has a salt sand gasser at a second test on the G. B. Parr farm. In Walton district, Roane County, the United Fuel Gas Co.'s test on the W. E. Dodd farm is a fair gasser in the Big Injun sand. In Washington district, Calhoun County, the Hope Natural Gas Co.'s tests on the Amos Jarvis and Nancy Starcher farms are gassers in the Big Injun sand. In DeKalb district, Gilmer County, the McAll Oil & Gas Co. completed a gasser in the Maxon sand at a test on the W. B. Boggs farm. The Carter Oil Co. got a gasser in the Squaw sand at a test on the J. B. Pratt farm, in Clay district, Ritchie County.

Gassers in Wetzel County

In Central district, Wetzel County, the Manufacturers Light & Heat Co. has a Big Injun sand gasser on the M. & F. Butcher farm. In Clay district, the same company's second test on the Thomas Little farm is a gasser in the salt sand. In the same district, the Carnegie Natural Gas Co.'s second test on the Archie McGuffey farm is dry in the fourth sand. In Center district, the Hope Natural Gas Co. has a good producer on the M. Carney farm. In Mannington district, Marion County, the same company has a gasser in the Gantz sand on the J. D. Wolfe farm. The Owens Bottle & Machine Co. got a gasser in the 50-foot sand at a test on the Roy Coogle farm in Paw Paw district. In Curry district, Putnam County, Monarch Oil Co.'s test on the Virginia Mitchell farm is a gasser. In Carroll district, Lincoln County, the Cambridge Gas & Carbon Co. has a Berea grit gasser at a test on the H. H. Sites farm. On Isaac Creek, Union district, Harrison County, the Reserve Gas Co. has drilled down from the fifth to the Speechley sand its old No. 1 on the J. H. Sommerville farm. It is showing for a 2-bbl. pumper at a total depth of 3,181 feet.

Better Than Average

On Dry Run, DeKalb district, Gilmer County, the Hope Construction & Refining Co. has completed in the Maxon sand a second test on the F. C. Gainer farm, 3,400 feet north of the first test, and good for 25 bbls. a day. On Walkers Creek, Walker district, Wood County, the South Penn Oil Co. has drilled No. 8 on the A. King farm through the Berea grit. It is a 5-bbl. pumper. On Poco River, Harper district, Roane County, located

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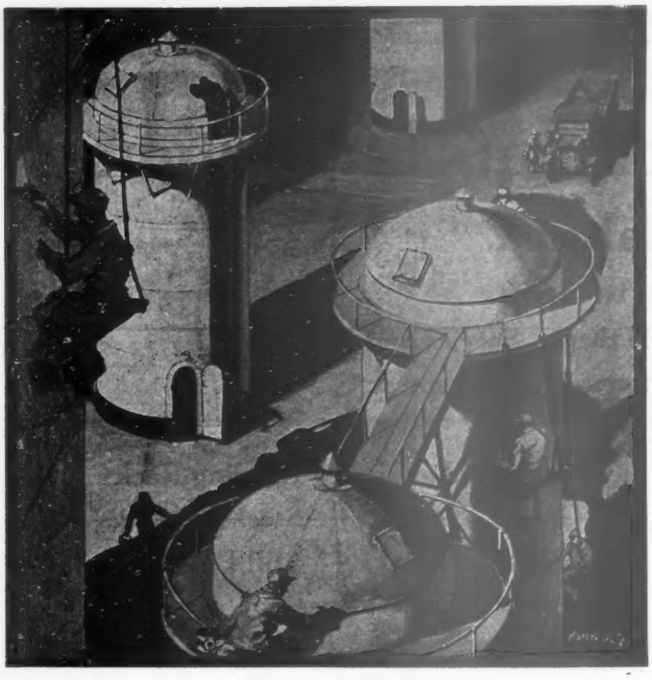

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2½ miles northwest of the Carter Oil Co.'s test on the Laura J. Hunt farm, the Empire Oil Co.'s test on the Mary Harper farm is dry and abandoned. In Center district, Wetzel County, the Manufacturers Light & Heat Co.'s test on the Jennie Furbee farm, is a gasser in the fourth sand. In Church district, the Carnegie Natural Gas Co. has plugged and abandoned its test on the Charles L. Snodgrass farm. In Center district, the Hope Natural Gas Co.'s test on the H. G. Richmon farm is dry in the fourth sand and abandoned.

Drilling and Starting Tests

In a number of the old West Virginia districts there is some new work starting. Some of the wells are first tests on farms that will be surrendered if they do not prove productive. In Clay district, Wood County, the Continental Oil & Gas Co. has the rig completed for a test on the S. P. Alleman farm. In Grant district, Pleasants County, E. S. Briggs has a rig on the A. Dunbar farm. On Fish Creek, Liberty district, Marshall County, the Lynn Camp Oil & Gas Co. has a rig up on the Thomas Blake farm. On the same stream and in the same district, the St. Joseph Oil & Gas Co. is building a rig on the J. W. Mason farm. In Freeman's Creek district, Lewis County, Steinbeck & Krouse have a rig completed on the Edwin Bailey farm. In Glenville district, Gilmer County, the Carnegie Natural Gas Co. is drilling on the Conner heirs' farm. In Skin Creek district, Lewis County, the Hope Natural Gas Co. has the rig completed and hauling tools to a location on the N. E. Boch farm. In Courthouse district, the same company is rigging up on the J. B. Watson farm and is due in the sand on the A. J. Whitsell farm.

In Glenville district, Gilmer County, the Roanoke Oil & Gas Co. has a rig up on the A. B. Campbell farm. In Courthouse district, Lewis County, the West Virginia Central Gas Co. has shut down for a cable at its test on the J. R. Roach farm. In Southwest district, Doddridge County, the Star Oil & Gas Co. has started to drill on the W. C. Haught and Bell farms. In Courthouse district, Lewis County, the West Virginia Central Gas Co. shut down for a cable on the J. R. Roach farm. The McCall Oil & Gas Co. has made a location on the E. B. McDonald 24 acres. The Manasas Oil Co. is rigging up on the James Snider farm, both in Union district, Ritchie County. In Clay district, the Boyce Oil Co. is rigging up on the John Freeman farm. In Union district, Wood County, Bowser & Ekas are testing for production in the salt sand on the E. & C. C. Davis farm. In Grant district, Ritchie County, the Hope Natural Gas Co. is building a rig on the W. R. Rutherford farm. The Victor Oil & Gas Co. is due in the sand at a test on the John Miller farm. In the same district, the Wiser Oil Co. is starting a second test on the Joab McIntyre farm.

Southeastern Ohio

One of the best producers completed in the Southeastern Ohio Fields during the past week is a deep sander, owned by the Wiser Oil Co. and located in Section 16, Ward Township, Hocking County, and is the company's No. 3 on the Green-Shultz farm. It produced 70 bbls. the first 24 hours after drilled through the Clinton sand and shot. In the Berea grit development in the southwest quarter of Section 25, Washington Township, Hocking County, the Gordon Oil Co. completed No. 3 on the F. N. Stout farm. It is a light pumper, 1,000 feet southwest of the same company's No. 7 on the William Stone farm. In the same section the same company has filled up the hole to the Berea grit at its first test on the same farm. It was then shot and is showing for a light pumper in the grit. In Licking Township, Licking County, W. W. & A. T. Wehrle have drilled No. 3 on the J. Baker farm, into the Big Lime and showing for a 5-bbl. pumper. The same company is drilling a test on the Hawkins farm. The Pure Oil Co.'s test on the J. W. Patterson farm in Clarke Township, Coshocton County, got only a light show of oil in the Clinton sand. It may possibly make a 3- or 4-bbl. pumper.

Shallow Sand Territory

In Tract 13, Harrison Township, Knox County, Hallbrain & Co. completed and shot in Berea grit a test on the Elliott Schooler farm, a light pumper. In Section 22, Curran Oil Co. completed and shot in the same formation a test on the Hugh Miller farm, a 5-bbl. pumper. In Section 6, Enoch Township, Noble County, C. V. Cain & Co. have a duster in the Buell Run sand at No. 4 on the L. H. Devold farm. In Section 6, J. H. Smith & Co. completed a duster on the Ayers farm. In Washington district, Monroe County, the Crew-Levick Co. has a light pumper at No. 21 on the M. M. Hodge farm. In Wayne Township, Ritchie & Williams got a 4-bbl. pumper at a second test on the O. Highman farm. In Greene Township, Templeton & Co. are drilling a test on the W. H. Thompson farm. In Monroe Township, Perry County, O'Connor & Keller have a 3-bbl. pumper at a test on the Sunday Creek Coal Co.'s property.

In Lot 22, Franklin Township, Licking County, Ralph Bros. have drilled No. 3 on the Boy Scouts Farm through the Berea grit and showing for a 3- or 4-bbl. pumper. In Section 16, Madison Township, Spindler & Donaldson have a 4-bbl. pumper in the same formation at a second test on the Curtis & Mary Round farm. In Section 33, Ward Township, Hocking County, the Arkansas Natural Gas Co. got a 3-bbl. pumper in the Berea grit at a second test on Helm Clay Co.'s property. In Section 26, C. H. Bell & Co. started to drill a second test on the National Fireproofing Co.'s farm. In Section 14, Madison Township, Licking County, W. W. & A. T. Wehrle are drilling a test on the C. R. Fetty farm.

W. H. ZAHNIZER DIES SUDDENLY IN NEW YORK

William H. Zahnizer, one of the most widely known oil operators in the country, died suddenly at his home in New York Sunday, September 30. The news was received in Tulsa by his business partner, A. H. Gibson. Mr. Gibson said before leaving New York the same evening, that Mr. Zahnizer had shown no indications of illness, and that he had been actively engaged in business up to Saturday. Deceased was a member of the producing firm of Gibson & Zahnizer; was vice president of the Atlantic Gulf Oil Corp.; vice president of the Galvez Oil Corp., and president of the Atlas Steel Barrel Co., of New York.

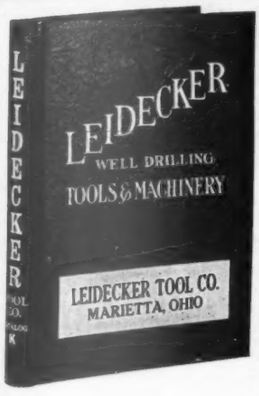
William H. Zahnizer was born in Mercer, Pa., 56 years ago. He entered the employ of Bovaird & Seyfang in Bradford, Pa., when a lad and worked his way up to the position of general manager of the Pittsburgh office of the firm. Then he resigned to go into the oil business with A. H. Gibson as a partner. Later the firm of Gibson, Zahnizer & Vincent was formed to operate in Mexico and in 1917 they drilled in a 100,000-bbl. well in the light oil fields of the Tampico area. Gibson & Zahnizer operated in Illinois in the boom days of that field and recently have been quite prominent in the Mid-Continent and had a big operating program under consideration along the Balcones fault in Texas.

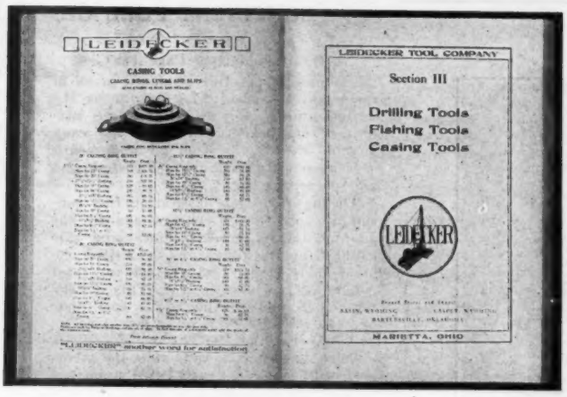
Mr. Zahnizer and the interests with which he was connected had offices in New York, Tulsa, Oklahoma City and Tampico.

The funeral and burial will be conducted in Mercer, Pa.

BORYSLAW PRODUCTION

The production of crude oil in the Boryslaw Basin, Poland, during July amounted to 15,480 metric tons, distributed as follows: Boryslaw proper, 5,515 tons; Tustanowice, 5,791 tons; Mraznica, 3,670 tons; Shodnica, 320 tons; other districts, 184 tons.





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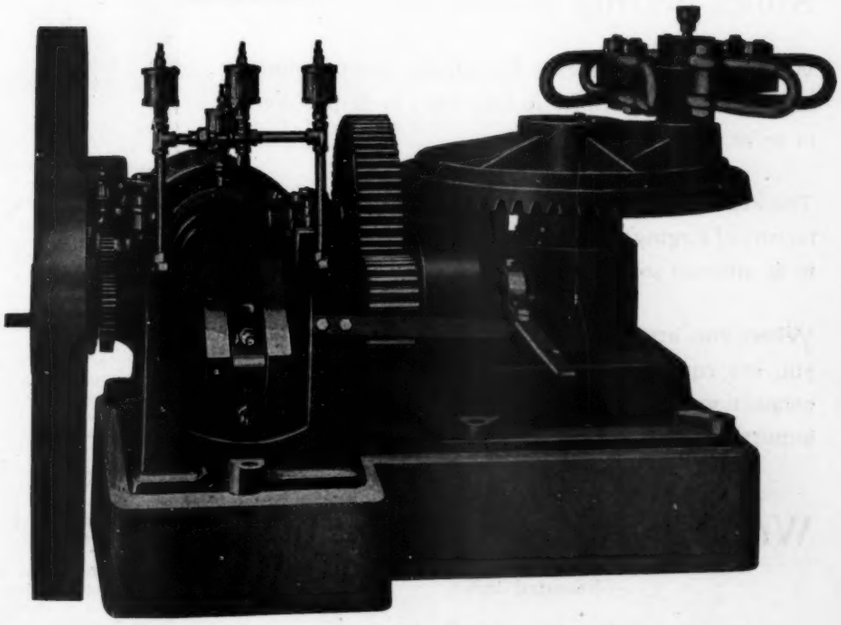

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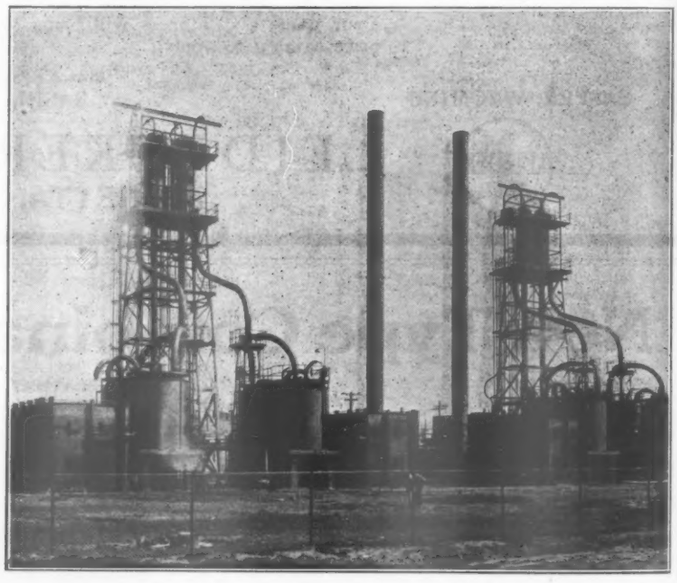
CRACKING OF MID-CONTINENT FUEL OIL

(Continued from Page 188)

the volume of gasoline produced in all of the runs cited was 4.7. As far as the writer knows, this is the lowest percentage of fuel ever used in the commercial cracking of fuel oil and means a tremendous saving in fuel cost during an operating year.

The usual method of stating fuel consumption is the percentage against the quantity of oil cracked and using this method for the nine runs submitted the percentage shows 1.93 against the total volume of fuel oil cracked. This is very low when one considers the fact that over 41 per cent of gasoline was produced while cracking 19,022 bbls. of fuel oil.

It is significant to note that the yields of gasoline obtained are based upon the passage of the charging stock through the process just once and does not include any recycling of tops from the residuum oil or the gas oil bottoms from the pressure distillate oil. It is obvious that the yield of gasoline would be increased by recycling the gas oil bottoms of the pressure distillate oil and tops from the residuum, and this is equivalent to fresh charging stock. The important factor in cracking is the amount of oil pumped into the system daily and the percentage of gasoline produced by one cycle of the oil charged.



Four Units of the Dubbs Process at Cushing, Okla.

It is to be noted that over 52,000 lbs. of coke was deposited during one of the runs in the reaction chamber (which is the unheated portion of the system) with less than 100 pounds in the heating tubes. The amount of oil which can be treated continuously producing high yields of gasoline by the Dubbs Process is limited solely by the size of the reaction chamber, to store the coke produced. However, the cracking of over 2,300 bbls. of Mid-Continent fuel oil yielding 41.88 per cent gasoline is the largest amount of fuel oil that has been cracked continuously to the knowledge of the writer.

A side elevation of the apparatus is shown in Figure 1 with photographs showing an installation of four standard 500 bbl. daily capacity Dubbs cracking units.

Mechanical Construction

The Dubbs Process of cracking hydrocarbon oils of widely different characteristics is simple in design and construction. It consists of a side fired furnace, a continuous heating coil connected by return bends having plugs therein for ease of opening and cleaning said coil. The coil is connected to a reaction chamber consisting of a vertical tank 10 feet in diameter and 15 feet high. The tank is insulated and no heat whatever is applied thereto. A vapor line is connected to the top of the vertical tank and the bottom of a dephlegmator, having a series of pans therein. A water condenser consisting of a continuous pipe is connected to the dephlegmator and in turn is connected with a pressure distillate receiver. A raw oil charging pump is connected by means of pipe to approximately the center of the dephlegmator. The hot ascending vapors mingle with the raw oil and the heavier portions condense flowing back by gravity to the heating coil. To control the temperature of the cracked vapors at the top of the dephlegmator raw charging oil is pumped at a rate to maintain the temperature of the vapors passing to the water condenser constant. The cracked residuum is withdrawn from the bottom of the vertical reaction chamber continuously through a control valve under pressure. Liquid level trycocks are placed at different heights on the side of the vertical tank so as to determine where the level of the oil is.

Temperature recording instruments are provided for the furnace; transfer liquid from the tubes to the reaction chamber; the cracked vapor as it passes to the water condenser from the top of the dephlegmator and the residuum leaving the vertical reaction chamber.

The pressure upon the system is recorded by means of a gauge placed upon the pressure distillate receiver.

Oil meters are provided for the measurement of the raw oil being pumped into the cracking system and for the pressure distillate oil produced.

A gas meter is provided to measure the cracked uncondensable gas produced.

Operation

The process is operated by pumping the oil to be treated under pressure, through the dephlegmator and the heating coil, and is brought up to the cracking temperature. The heated oil passes into the reaction chamber to be converted into cracked products, such as vapor, residuum oil, coke, and uncondensable gas. The cracked vapor passes to the dephlegmator wherein the heavier portions are condensed as a liquid, mixed with the charging oil, then flowing by gravity to the heating coil, to be brought to cracking conditions therein. The lighter cracked vapor and uncondensable gas pass to the water condenser and receiver from which the pressure distillate flows continuously through a control valve to a storage tank. The residual oil under pressure passes out of the bottom of the vertical tank through a control valve, into a water condenser and on to a storage tank.

The uncondensable gas produced in excess of that required to maintain the pressure upon the system is allowed to pass out of the system by means of a

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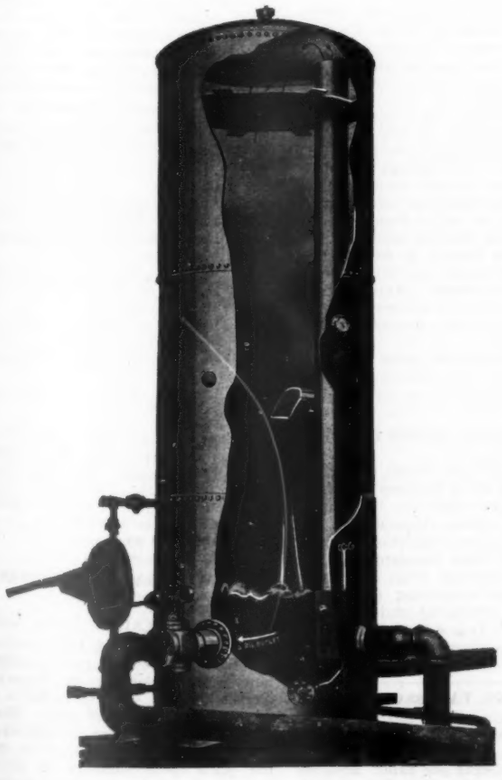

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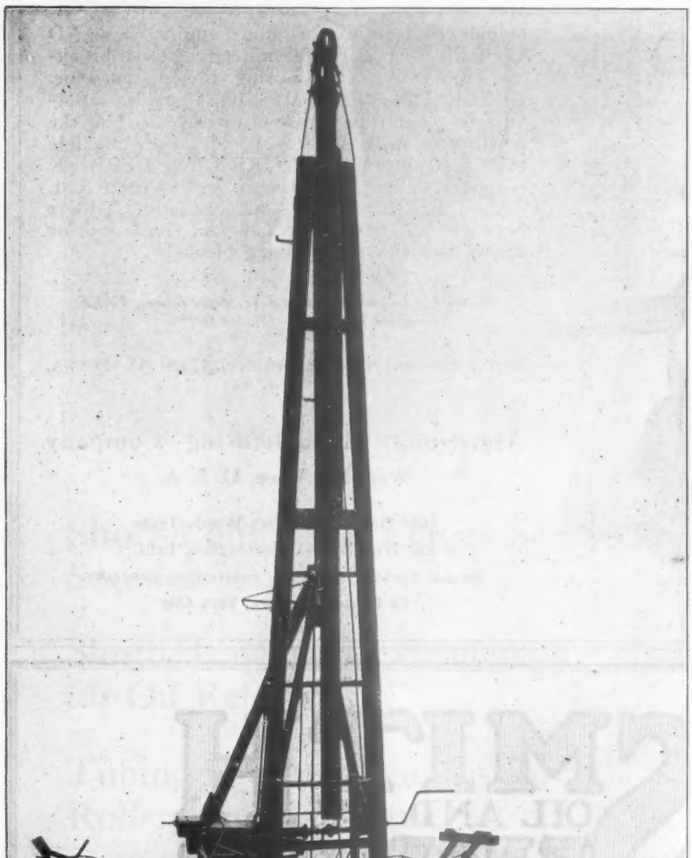

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control valve and is burned in the furnace.

The coke produced during the run deposits in the vertical reaction chamber which is not heated.

The operating conditions, amount of oil cracked, products and yields are tabulated of typical Mid-Continent fuel oil runs made in a commercial unitl rated at 250 bbls. a day charging capacity.

There are now more than ninety standard 500 bbbls. Dubbs cracking units in operation and under construction.

Fundamental Principles of the Process:

A. Distillation and condensation under pressure.

B. Only clean charging stock and the refluxed heavier ends of the cracked vapors are circulated through the heating coil and freed from contamination with residuum oil which contains carbon and is a high carbon forming oil. This residium oil is separately, continuously and uniformly withdrawn from the vertical reaction chamber.

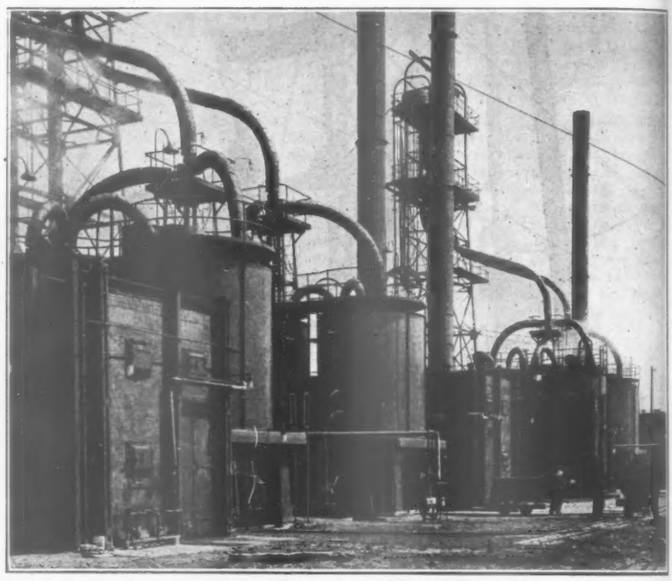
C. There are but ten barrels of oil in the heating zone of the system. The reaction chamber is not externally fired at any time and never contains more than 25 bbls. at any one time and this cannot siphon back into the heating tubes. In a 500 bbl. unit daily capacity, there is never more than 35 bbls. of oil undergoing treatment at any one time, of which less than one-third is in the heating zone.

D. The carbon formed is deposited in the reaction chamber installed outside of the heating zone. This reaction chamber has no heat whatever applied to it, hence no fire hazards are involved.

E. The control of the plant is simple and three men on a shift are capable of operating two units with a total capacity of over 1,000 barrels per day. The operator controls the amount of raw oil going into the system at a pre-determined rate, and the furnace conditions adjusted to the desired temperature with a constant pressure on the system, a smooth, continuous operation is obtained, which yields a definite amount of pressure distillate, residuum oil, carbon and uncondensable gas.

F. Water in the oil does not affect the operation of the process. It is a noteworthy fact that once the operating conditions are fixed, the operator and firemen have very little to do. This fact has been shown for periods of days by means of operating charts of temperatures and pressure which have shown practically straight lines.

G. Any type oil such as distillate, fuel oil, topped crude or heavy crude oil has been cracked in this process in the same apparatus, with only slight changes in operating conditions but with no changes in the apparatus.



Another View of a Dubbs Process Installation

Operating Conditions

The operating conditions during each run were maintained constant and were as follows:

1. Pressure.
2. Liquid temperature.
3. Furnace temperature.
4. Dephlegmator vapor entering temperature.
5. Vapor leaving top of dephlegmator.
6. Barrels of oil charged to this system per hour.
7. Barrels of pressure distillate oil produced per hour.
8. Uncondensable gas produced per hour.

TEXHOMA USING DUBBS PROCESS

WICHITA FALLS, Texas, Sept. 30.—The Texhoma Oil & Refining Co. started operating two units of the Dubbs process at its refinery here during the past few days. The installation of these units had just been completed by the Universal Oil Products Co. The latter company is also completing the installation of two additional units at the Texhoma plant. It is expected that they will be ready to operate about the middle of October.

GASOLINE TAX $3,000,000

AUSTIN, Texas, Oct. 1.—The State comptroller has collected a total of $1,090,000 on the 1-cent per gallon gasoline tax since the law became effective last April, according to summary issued at the close of September. The collections were: For April and May, $400,000, being held pending injunction proceeding; for July, $149,958; August, $277,786 and for September, $262,838. The tax run over $250,000 per month, or over $3,000,000 per year.

NEW MEGARGEL REFINING

WICHITA FALLS, Texas, Sept. 30.—The Megargel Oil & Refining Co. during the past week started operating its new refinery located at Megargel in Archer County. The plant has a skimming capacity of 1,500 bbls. The first runs at the plant were satisfactory. Officials of the company expect to operate the plant near capacity in the near future. Crude for the plant is obtained from nearby pools.

PRICE CUTTING CONTINUES, IN CHICAGO

Gasoline Reduced 2 Cents at Detroit and Des Moines to Meet Local Slashes—Weeding Out Too Many Dealers. Kerosene Firm. Fuel Oil Steady. Gas Oil Quiet. Lubricants in Good Demand

By John B. Waldo

CHICAGO, Oct. 1.—While the refinery price of gasoline in this market is more firm, the cutting of prices by distributors continues and is extending to the more important cities with almost endless possibilities of a price war at important consuming centers. On September 27 the Standard Oil Co., (Ind.) reduced the price of gasoline 2 cents at Detroit following a similar reduction by the White Star Refining Co., of that city. In the territory of the Standard Oil Co. there are hundreds of points where the price has been reduced on the initiation of the independent organizations and in each case the other companies have followed the cut. Various reasons for these reductions in selling prices are given but one question that remains to be settled is can the distributor make money purchasing gasoline at the current refining prices and selling at the current tank wagon prices? If he can what becomes of the many statements by distributors that at least 4 cents margin is necessary to do a profitable business? If the 4-cent margin is required to do business at a profit, why does the distributor cut prices?

Small Factor in Trade

The business done by the class of concerns that are the initiators in the price cutting orgy that is going on forms but a small percentage of the entire industry. The estimates of the proportion of the gasoline sold in this territory by the Standard Oil Co. (Ind.) varies between 45 and 55 per cent. Sinclair is credited with selling 20 per cent by many oil men, some say 25 per cent. Then there are a dozen, more or less, refinery-distributing organizations such as The Texas Co., Shaffer Oil & Refining Co., Indian Refining Co., Roxana Petroleum Corp., Producers & Refiners Corp., White Eagle Oil & Refining Co., and others, most of whom do business in only a part of the 11 States which concerns oil men credit with doing at least 8 per cent of the distribution.

This leaves a total distribution for the independent jobber, considering only those who purchase from the refinery and confine their business to actual distribution by truck and filling station, at from 27 per cent to 12 per cent of the entire amount sold in the territory. Of these there are many well established distributors who cover considerable territory and have many stations who are as strong against price cutting as the Standard or any conservative company can be, so that the actual sales by price cutting organizations can be put at a very small part of the consumption of gasoline in the district.

Gasoline Is Steady

The gasoline market is about ready. There is little New Navy to be had at less than 6½ cents and the quantity of that offered is apparently growing less. Some of the refiners with a large number of marginal contracts are asking 7 cents and state that they are doing some business at that figure. Just how much they are not so willing to state, but they are selling some and talk of advancing their price to 7½ cents for spot orders. But the bulk of the business is being entered at 6¾ cents with some sales at 6½ cents. This is a great improvement over conditions at the beginning of the month when the market was soft and prices dropped to 6¼ cents and some times a bargain price of 6 cents. The demand is almost entirely for New Navy grade with little if any 56-58 selling in this part of the country. The demand for the 60-62 and the still higher gravities runs along at the old figure and there is little business doing. Blends are doing better and sellers report that their price is higher in accordance with the higher prices for the Navy grade. Natural gasoline is still scarce. Local sellers state they have nothing for shipment before the early part of October and are firm as to prices with 8 cents asked for the Grade A natural gasoline. This price is less than one-half the price at which sales were being made a year ago.

Kerosene Is Firm

The demand for kerosene is firm and prices are moving slowly upward. The demand is improving both for nearby and for export trade. There is no particular feature of the situation which is looked up as entirely seasonable. It is believed there will be a large demand for kerosene to replenish stocks in Japan but this is not expected to have much, if any, influence on the Chicago situation as the larger part of it that comes to the United States will be met by the tidewater refineries on the East and West coasts. In fact, large shipments are loading and have gone forward already.

The demand for distillate is growing quite rapidly and the product is not very plentiful. Prices are higher. The reason is in the great number of new installations of oil burners for home heat. Business is reported good and some orders are being delayed by the rush that comes with the first cold days and the need to start the furnace to take off the morning and evening chill.

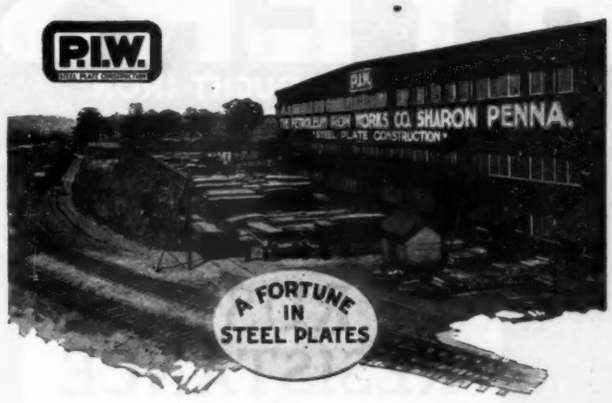
Fuel Oil Holds Its Own

There is not the snap to the demand that there should be right now on the threshold of the season of largest consumption. The manufacturing industries as a rule and the transportation lines with no exceptions have before them a much better season than last spring or last fall and yet the market is not strong or the demand at all animated. The steel industry is rather halting in new business as buyers are holding back from placing orders seeking for price concessions but the present list of orders is large and the mills are running at least 80 per cent capacity. Prices have touched as low as 82½ cents during the week and are not strong at the close, although refiners continue to quote 85 cents to 90 cents as the market.

Gas oil continues dull and even the most optimistic sellers have come to the conclusion that the demand is limited and elusive. Prices are easy but unchanged, being as low as they can go with fuel oil at its present level.

Lubricating Oils

The demand is well reported and refiners still state that on the wanted grades in pale colors the demand is such as to make it impossible to fill orders promptly and that they have not yet caught up with the past business. Prices are steady but some of the refiners have not met the advance, at least on many grades, and these claim they are not sending out new price lists because the price situation is not settled as yet. The demand for steam cylinder stocks has improved and representatives of refiners of Pennsylvania lubs have advanced their prices on these grades. The demand for lubricants for motor industry is still very good.



SO the industry may be served promptly in any crisis, P. I. W. invests a fortune in steel plates. And many times in the face of a rising market, its customers have shared the saving made possible by this courage and foresight.

P. I. W. is big enough to do these things, and yet human enough to pass them along.

Wire or write for prompt shipments of tankage and equipment.

"P. I. W. Service Is World Wide"

THE PETROLEUM IRON WORKS COMPANY

SHARON, PA.

New York St. Louis Houston Casper Tulsa San Francisco

BYERS
GENUINE WROUGHT IRON
PIPE

RUST-RESISTANCE

is the biggest word in pipe durability

Not long ago, the superintendent of a large gas company had occasion to pull the casing from some 8 or 10 old gas wells. In all but two of these, the casing was Byers, and was pulled without the loss of a foot of pipe. In the remaining two wells, the steel casing pulled apart repeatedly, having suffered so severely from corrosion as to be unable to stand the stress of pulling, and very little of the pipe was fit to use again.

The life of casing, line pipe, and tubing, largely depends on their rust-resistance. Byers' genuine iron pipe is known to **"wear"** better than steel pipe, largely because, after years of service, it suffers so little from rust that it retains its original physical strength and clean, accurate threads.

A. M. BYERS COMPANY
Established 1864
PITTSBURGH, PA.

Representatives:
S. D. OLIPHANT, Tulsa, Okla.
J. A. ARMSTRONG, Los Angeles, Calif.
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Genuine
Wrought Iron
Casing Tubing
Line Pipe
Refinery Pipe

DEMAND FOR REFINED HOLDS AT OIL CITY

OIL CITY, Pa., Oct. 1.—With the exception of neutrals the demand for the various refined products in the Northwestern Pennsylvania district has either held its own or increased during the week. Neutrals are dormant, but this is to be expected at this season. The market on many other products is much improved and refiners are becoming more optimistic than in months.

Kerosene is distinctly the market feature now. The price is on the increase, the product is becoming scarce in this refining area and the demand has grown greatly. Some refiners and jobbers have been forced to turn down sales of water white because they did not have the product. Forty-five water white, the market leader in this division, is now selling at the refineries at 7 cents, although in some cases this price has been shaded a very little. This is the highest tank car price for this product this summer. The prices of other kerosenes have been advancing in proportion during recent weeks.

Cylinder stocks are stronger. Some larger companies have been in the market during the past few weeks, and, although they did not buy large amounts, their purchases tended to strangethen the market.

The gasoline demand is continuing strong. Prices for motor fuels are continuing to hold their own. There has been some decrease in gasoline consumption in this territory during the past couple of weeks, but not anywhere the amount that was expected. Tourists are not on the road in the large numbers which was a feature of the summer traffic, but the local trade is holding up in splendid fashion. The average automobile owner seems to be using his machine more than at any time.

Fuel oil continues to be another feature. The prices are advancing and the demand seems to be constantly growing, while the storage is not large.

The improvement in the refined market is especially pleasing to Northwestern Pennsylvania refiners, coming as it did right on top of a decrease in crude prices.

GASOLINE STEADY IN NORTH TEXAS MARKET

FORT WORTH, Tex., Oct. 1.—Due to a good spot demand the North Texas gasoline market has remained fairly steady the past week, 58-60 New Navy being generally quoted at 6¼ to 6½, with some few sales being made at 6¾. While little or no sales have been made over October, spot shipments have been rather heavy, resulting in a firm market with a slight tendency toward higher prices.

Gasoline stocks in North Texas have been reduced to a point where they do not now constitute any real menace; on the other hand, the more favorable demand and better crude prices have resulted in slightly increased runs and the reopening of a few plants that were formerly closed down. Previous export orders have practically depleted the stocks of 64-66.

Kerosene remains scarce with prices ranging from 3¾ to 4 cents.

Natural gasoline is very scarce in this territory, a number of plants being oversold and immediate shipments hard to obtain. The majority of sales are being made to refineries who are using these blends to bring up their heavier ends.

There has been a considerable demand for 38-40 light straw distillate during the past week, resulting in somewhat of a scarcity of this grade. The lower gravities of gas oil remain firm at 2¼ to 2½ cents.

Fuel oil continues weak, the market generally being 75 to 80 cents. A few of the larger purchasers who formerly secured their requirements from North Texas have filled their contracts with Luling crude, and the present movement of fuel oil from this section is somewhat below normal for this time of the year, which has naturally resulted in increased stocks. One or two refineries who usually have a large quantity of fuel oil available are running it through their recently installed cracking plants, which has relieved the situation to this extent.

GROUP THREE PRICES PRACTICALLY UNCHANGED

(Continued from Page 26)

state they are experiencing stiff competition from the Pennsylvania and Gulf Coast refiners.

Crude Situation

Although lower prices have recently been made effective by a few independent buyers there is less crude available than there was a month ago. The major purchasing companies in Oklahoma are still prorating their purchases but less distress crude is available. This is especially true in the North Texas area. The high gravity crudes of that section have been available at $1.05 up to a couple of weeks ago. Prices have advanced from 10 to 15 cents. The action of the Magnolia Petroleum Co. in offering to take 100 per cent of the oil at above 35 gravity at $1 has been held responsible for the condition. At least a couple of the larger independent refiners have made the same proposition and have been able to purchase a limited amount. Those in touch with the crude situation in Oklahoma predict another scramble for crude supplies among refiners when the major purchasing companies start taking 100 per cent of the oil from producers.

COASTAL REFINERIES ADVANCE QUOTATIONS

HOUSTON, Texas, Oct. 1.—There is evidence of the shift in buying Coastal lubricants, with the summer oils sagging in quotations, while the lighter oils respond in quotations to the increased movement. So far the changes in quotations in these oils has brought only a wider step between the high and low figures. The concerns that have scant stocks are advancing quotations in anticipation of a coming better market. There is very little winter oil in the "distress" classification at Coastal refineries. Most of this is being taken by other refiners in the district and frequently it is being turned at a profit on spot deals.

Sales managers of the concerns offering zero cold test oils are in the midst of an intense campaign. "Out of town," is the common reply when they are called on. And this reply means "out after business." With the present price scale, it is an accepted condition that profit from winter business will depend largely on volume. The operation of a lubricating plant at full capacity requires but little more expense than operating at half capacity. The sales departments are being pressed to provide outlets that will keep plants running up near capacity.

Prices on zero cold test oils are but little lower now than they were when crude oil cost $1.75 a barrel. The price is now $1 and premiums are not being paid. Plants now are running on crude at the lower price. So the profit possibility is within reach, being where many think volume will assure it.

While there is an evidence of a better movement of gas oil and fuel oil, prices have not yet changed. With the season on these so close at hand, refiners are not worried over these products. Their movement is a matter of the coming of proper weather. Inquiries are sufficient to assure movement at the proper time.

STEWART AND FARISH CONFER

Col. Robert W. Stewart, chairman of the board of the Standard Oil Co. of Indiana, has returned to Chicago and W. S. Farish, president of the Humble Oil & Refining Co., to Houston, after conferences in New York on oil conditions.

Petroleum Section Of Safety Congress In Buffalo Session

By Elmo D. Murphey

BUFFALO, N. Y., Oct. 2.—The twelfth annual Safety Congress of the National Safety Council, being held at Buffalo October 1 to 5, has record registration of delegates, over 3,200 the first two days. Buffalo is doing herself proud in entertaining the delegates.

One of the most important actions Monday was the acceptance of the invitation of the International Labor Office of the League of Nations to send a representative and exhibit to the conference of the league envoys from 55 countries at Geneva, Switzerland, October 22.

Mayor Schwab in his welcoming address declared America is rapidly changing from the once predominating idea of dollars and cents to a recognition of the claims of humanity.

Marcus A. Dow of New York City, president of the National Safety Council, made a stirring appeal outlining immediate steps to be taken to lessen the appalling and ever increasing toll of human lives in the United States.

Dr. Royal Meeker, secretary of the Pennsylvania Department of Labor, declared the United States was the most careless large nation and stressed the importance of giving more attention to inspection of equipment and practices in industrial work to reduce economic losses from accidents.

Bernard L. Shientag, State Industrial Commissioner, New York, stated that capital and labor working together wholeheartedly, can do much to reduce the tremendous human and economic loss occasioned by accidents each year.

Albert W. Whitney said in his address that safety, rightly interpreted, instead of making the world safe from danger or bad adventure makes the world safe for good adventure.

The petroleum section held its first session Tuesday morning with more than 70 present. E. A. Timm, of the Standard Oil Co., Bayonne, read a comprehensive paper on "Acetylene Welding and Safety in Oil Plants," outlining in detail the dangers met and the safe practice to overcome them. Mr. Timm favored electric welding apparatus only for cutting, claiming that oxy-acetylene welding does not tend to crystallize metal as often as electric welding.

One of the most absorbing topics in the round table discussion was asphyxiation from petroleum fumes. The exhibition and explanation using the latest type of mask and respirator protection and the Shafer resuscitation method, proved absorbingly interesting.

D. J. Wallace, of the Humble Oil & Refining Co., showed an excellent three-reel film, "Bringing Safety to the Producing Field." This film was produced by the Petroleum Safety Council of Texas. Tuesday night the petroleum section held their first annual banquet in the Iroquois room, Statler Hotel. It was such a feast as an oil man appreciates and there were no speeches. Instead, the film, "When Wages Stop," prepared by the cooperation of several California oil companies, was shown. The Friday morning session will close the petroleum section.

DENIES SALE RUMORS

Rumors concerning the sale of R. H. Smith's properties in Seminole County, which have been afloat for several weeks following the completion of additional good wells in the Wewoka Field, were denied emphatically Wednesday by Mr. Smith while in Tulsa.

"The formation of the Oklahoma company under the laws of Delaware has been perfected and all the leases in Seminole County taken under my name have been made a part of the assets of the new concern," Mr. Smith declared. "About 5,000 acres under lease in Townships 8-8, 7-7 and 6-7, Seminole County, are included. The company is capitalized at $2,500,000 and the following directors have been named: R. H. Smith, Philadelphia; F. M. Kirby, vice president Woolworth & Co., New York City; F. T. Armstrong, of Blair & Co., New York City; Alexander Jarecki, Jarecki Manufacturing Co., Erie, Pa., and J. F. Lloyd, of Holdenville, Okla. The directors will meet soon to elect officers.

Floods Cause Loss Of Oil Properties In Wyoming Fields

CASPER, Wyo., Oct. 2.—The floods prevailing throughout Wyoming, following cloudbursts and heavy rains, have been particularly destructive to oil property, causing losses estimated at $330,000.

The Midwest Refining Co. was probably the heaviest sufferer. The main pipe line pumping station at the Salt Creek Field had seven feet of water on the main floor which will necessitate renovating all the machinery there.

Thousands of barrels of oil were lost by breaks in the lines but fortunately there were no fires from the oil-filmed water, and the damage to trunk lines can be easily repaired. Several crews at isolated drilling wells were compelled to spend a day or two on platforms built in the derricks but no casualties are reported so far, except those in the wreck of the Burlington train which fell through an undermined trestle over Cole Creek, 14 miles east of this city and in which it is feared several oil men were among the victims.

Communication is being re-established with the fields but complete reports are not yet available. A number of bridges were washed out. The Standard of Indiana saved the big bridge over Platte River at Casper and the bridge across Casper Creek, sending all available men under Engineer William Tolhurst to the assistance of Highways Superintendent Bowman at his request.

STORAGE IN TRANSIT HEARING IN ST. LOUIS

Producers and supply men of the Southwest feel they are one step nearer securing the storage in transit privilege at St. Louis on oil field tubular goods as a result of the hearing before the Southwestern Rate Bureau in St. Louis, Thursday, September 27. A number of traffic men from the major producing companies with offices in Tulsa and several members of the Purchasing Agents Association of Tulsa presented the advantages to shippers.

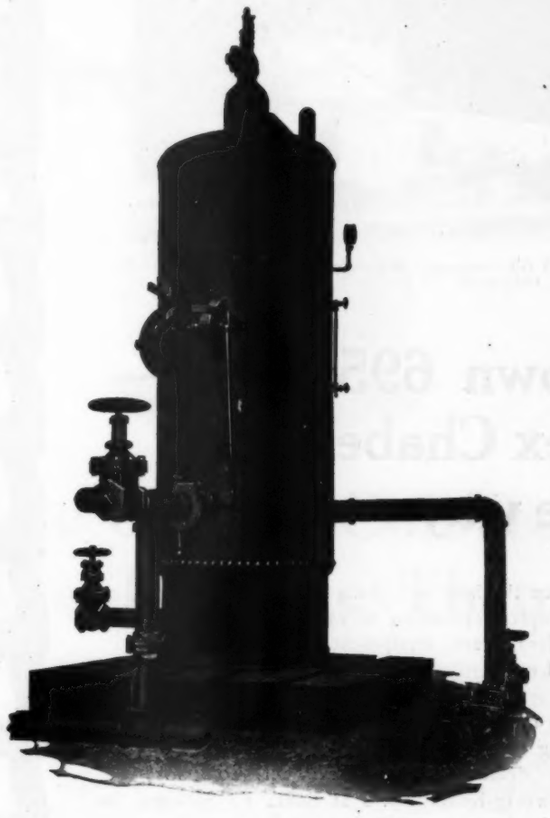
There seemed to be no active opposition to the plan and the representatives of the bureau appeared impressed with the proposal. They, however, referred the matter for decision to the General Rate Committee, which has set a tentative date on October 8, at St. Louis, for considering the proposal. There is a movement on foot in Tulsa to have the hearing transferred to Tulsa some time during the exposition.

JOHN C. M'KISSON DEAD

TOLEDO, Ohio, Oct. 1.—John C. McKisson, aged 68 years, and a veteran oil operator, died at the residence of his daughter in Toledo, Ohio, after a long illness. Mr. McKisson came to the Ohio fields from Oil City, Pa., in the 80's with Pew & Emmerson (The Sun Oil Co.) and early in 1890 formed a partnership with Anson G. Argue, another veteran Pennsylvania operator, now a resident of Toledo. Mr. McKisson also engaged in the manufacturing business in Toledo, but several years ago went to California for his health.

IMPROVED TRUMBLE

OIL AND GAS SEPARATOR



The Trumble Oil and Gas Separator keeps the gasoline in the oil by maintaining the gas under pressure when it is leaving the oil, which results in preventing it from expanding and increasing its capacity for carrying the gasoline.

Spreads the oil in a thin body so gas leaves it with the least possible obstruction.

The large spreading surface over which oil flows insures immediate escape of gas from oil and accounts for the Trumble capacity of the Trumble Trap.

Made in different designs to meet all requirements.

Increase your profits by saving the gasoline in your oil by using a Trumble Oil and Gas Separator.

TRUMBLE GAS TRAP COMPANY
804 Higgins Bldg., Los Angeles, Cal.
WILLIAM C. RAE, Sales Manager

Eastern Representative:
C. F. CAMP, Box 289, TULSA, OKLAHOMA

Standard Oil Company's Brownrig-Keller No. 2 at Santa Fe Springs, California.

Down 6950 feet—Rex Chabelco all the way

When the hole is to be a deep one and uninterrupted operation is especially important, drillers want equipment they **know** will hold up.

The fact that Rex Chabelco chain drives are being used exclusively on the deepest well now drilling—Standard Oil Company's Brownrig-Keller No. 2 at Santa Fe Springs, Calif., down to 6,950 feet on August 24—is another proof of the super-endurance of this powerful all-steel chain.

See to it that the drives on your rigs are fitted with genuine Rex Chabelco. It wears a long time and protects against breakdowns. It will lower your footage costs.

REX CHAIN

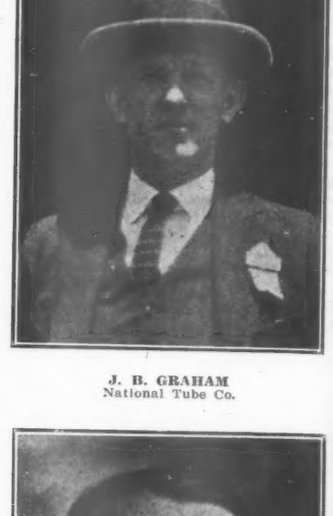
Made Only by
CHAIN BELT COMPANY, Milwaukee
Distributed by
Leading Supply Houses in All Fields

AMONG SUPPLY MEN AT EXPOSITION

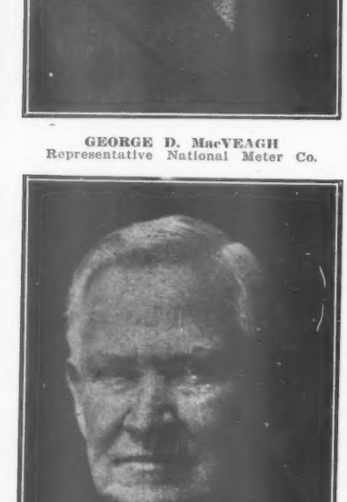
GEORGE D. MacVEAGH
Representative National Meter Co.

J. B. GRAHAM
National Tube Co.

J. J. QUARLES
Manager Gas-Tite Device Co.



J. S. WARREN
Secretary-Treasurer and Manager Maloney Tank Manufacturing Co.



ORVEY JOHNSON
Homestead Valve Manufacturing Co.

JOHN E. HOSIER
Chicago Representative National Meter Co.

CALIFORNIA FIELDS

(Continued from Page 54)

of the Santa Fe Springs Oil Syndicate was completed at 4,480 feet during the week and is being swabbed for production. At least a 1,000-bbl. producer is expected when it is put on production.

Long Beach

An increase in the production at Long Beach is due to the completion of several wells producing from the deep sand. Because of this deep production some little doubt exists whether the peak of production has been reached in this field. At any rate it will probably show still further gains and because there is no serious water menace in the lower zone, production will not show any material decline for some time. There were 10 wells completed during the past week with an initial daily production of 17,250 bbls., the largest of which was the General Petroleum Co.'s No. 3 Clark. This well struck the pay at 4,918 feet and showed an initial production of 3,150 bbls. of 29.8 gravity oil. The oil is flowing under a pressure of 250 pounds and shows a cut of 1 per cent. Number 1 Clock, the company's deep well, is still held up with a fishing job at 5,972 feet. A string of 3-inch drill pipe has been stuck in the hole for about three weeks and all efforts to free it have failed. The Mack Trust, under the supervision of Irving Augur, completed its well No. 1 from 4,750 feet and put it on production flowing 3,000 bbls. per day. The oil, flowing through a ¾-inch bean under a pressure of 450 pounds, is clean and tests 26.5 degrees. The Hub Oil Co.'s No. 1 Lough, which came in during the latter part of the week, showed a steady production of 1,500 bbls. This well was completed at 4,604 feet and the oil, which tests 25.1 degrees, is flowing through a ¾-inch bean under a pressure of 300 pounds.

There was one recompletion recorded during the period of this report, the Capital Oil Co.'s No. 1 Garner-Kelly. This well, after being redrilled and deepened to 4,700 feet, was returned to production flowing 2,000 bbls. of 27.1 gravity oil. It is flowing through a ⅞-inch bean under a pressure of 500 pounds and shows a cut of 1 per cent. The Bay Hills Oil Co. completed a slightly smaller well when No. 1 Special Delivery was brought in. This new producer was brought in from 4,238 feet and registered an initial flow of 1,750 bbls. through a ½-inch bean under a pressure of 600 pounds. While the fluid production was fairly high, 1,750 bbls., about 15 per cent of it was water. Because of the unusually large cut, this well will undoubtedly be recemented and after a successful water shut-off is secured it is believed the production will increase.

Cut Reduced

The Petroleum Midway Co. also had a little trouble, its No. 2 Gray showing a cut of 10 per cent upon completion. This well, which was drilled to 4,400 feet, came in making 350 bbls. of 20.1 gravity oil, but after the first days' flow the cut had been reduced from 10 per cent and the production had increased to 450 bbls. The Pacific Corp. completed No. 4 Wyatt at 3,865 feet and when it failed to flow, it was put on the pump and has been doing 200 bbls. a day since the completion. The oil tests 22.1 degrees in gravity and shows a cut of 1 per cent. The Pan-Pacific Oil Co.'s No. 2, completed at 4,465 feet, was put on a production test but it did not have sufficient kick to flow, and judging from appearances it will probably have to go on the pump. The Pan-American Petroleum Co. will secure its first production on the Union Pacific right of way at Long Beach within the next week or two. Number 1 is making hole at 4,800 feet, while No. 2 is close to 5,000 feet. The present formation is hard sand and production is anticipated at slightly less than 5,100 feet. The Regina Petroleum Co. has been battling a water problem in No. 1 Judd for some time and, after cementing off bottom water and running in a string of tubing, the company has finally succeeded in securing a production of 200 bbls. a day. The well was originally drilled to 5,150 feet and ran into bottom water at this depth. It was plugged back to 4,600 feet, from which depth it is producing at present. A log of the well shows several water sands and oil sands occurring intermittently. This makes a complete shut-off practically impossible and accounts for the presence of approximately 15 per cent water in the production.

The Shell Oil Co. put two wells on production, No. 7 Alamitos, a deep well completed at 5,221 feet, and No. 3 Babb, brought in from 4,100 feet. Number 7 Alamitos showed an initial production of 3,000 bbls. of clean 28.6 gravity oil, while No. 3 Babb made 2,000 bbls. of 27.3 gravity oil.

Huntington Beach

Present indications at Huntington Beach point to another decrease next week and it has been estimated that the field's daily production will have declined to 75,000 bbls. daily around the first of the year. The day of large wells at Huntington Beach has long since passed, and, while there have been about 500 bbls. a day of new production brought in each week, the decline in older wells has been greater with the result that the output has been steadily declining. During the week there was one new well brought in and two others recompleted after being redrilled and deepened. The largest was the Western Seaboard's No. 1 Russel, redrilled and deepened to 4,880 feet, good for 300 bbls. a day of 24.8 gravity oil with a cut of 1 per cent. The Olig Crude Oil Co. was also successful in returning a former small well to production. The company's recompletion was well No. 1, cleaned out and deepened to 3,500 feet. The production from this well was rather small, 150 bbls., but the oil, which tests 21.1 degrees, is clean. The only new well was the Sun Oil Co.'s No. 6, which was completed at 3,125 feet. It, too, was a small well, the maximum production being 100 bbls. a day of 19.9 gravity oil with a cut of 1 per cent. The Sun Oil Co. was one of the first of the independent companies to enter Huntington Beach, but, its wells were all comparatively small and overhead expenses heavy.

Miscellaneous Drilling

Although the Torrance Field was opened up over a year ago, it has only been recently there has been any great amount of development work done. Several good sized wells have been brought in, which extended the limits of the field very materially and drew the attention of operators to the possibilities of this new area. When the Midway Northern's well came in a month or so ago doing 1,500 bbls. a day it extended the proven limits of the field and resulted in six new wells being started in that immediate vicinity within a short time. The U. S. Royalties' well No. 9, which was brought in during the past week, is an offset to the Midway Northern's well. The U. S. Royalties' No. 9 is the largest producer yielding the highest gravity oil which has been completed in the Torrance Field to date. It was drilled to 3,667 feet and came in flowing 3,000 bbls. a day of clean 28.4 gravity oil. Chanslor-Canfield Midway Oil Co. also brought in a nice well, its No. 8 Torrance coming in at the rate of 2,000 bbls. This well, completed at 3,723 feet, was drilled slightly deeper than the U. S. Royalties' well.

Waiting at Compton

The Union Oil Co.'s No. 1 Callender at Compton is still making about 1,200 bbls. a day and, while the field is only of recent origin, there is no unusual amount of actual development work being done. Operators seem to be all waiting to see the result of the Union Oil Co.'s and C. C. Julian's wells. Should the Union Oil Co. bring in No. 1 Rosecrans it will extend the field about 2 miles to the northwest and probably result in another orgy of town lot drilling.

Hazard

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POWELL BOOSTS SEPTEMBER'S NEW OUTPUT

(Continued from Page 34)

Arkansas							
Wildcats	11	100	9	1	16	23	39
Bellevue	12	510	2	0	5	6	11
Caddo	3	300	2	0	3	12	15
Claiborne	1	0	1	0	3	5	8
De Soto	0	0	0	0	0	4	4
Red River	1	0	1	0	0	4	4
La. Wildcats	18	0	5	13	13	48	61
Ttl. Sept.	174	31,135	38	14	112	228	340
Ttl. Aug.	236	55,200	46	24	122	277	399
Difference	62	24,065	8	10	10	49	59

Heavy decline in production in both areas is evidenced by the summary of September operations in the North Louisiana and South Arkansas Fields. Only 810 bbls. of new production was secured during the month in Louisiana, a little more than a third of that of the preceding month, and Arkansas shows a decline of about 43 per cent from the preceding month. The average per well in the Smackover district was only 285 bbls. as against 425 bbls. in August and 860 bbls. in July.

Gas production also failed to keep pace with that of August, the total being only 122,500,000 feet from all Louisiana wildcats, against nearly 260,000,000 feet the preceding month.

Nothing in the way of prospective new production was developed during the month. Operations in Union Parish have not proceeded to a point where anything may be determined from them as to success or failure. The Caddo Parish well in 15-18-16, known as Virginia Sharp No. 1, which blew out from 1,756 feet with a potential estimated from 5,000,000 to 12,000,000 feet, will probably be abandoned on account of a bad fishing job and another test drilled on the same location.

EASTERN FIELDS

Summary of Completed Work

Field—	Comp.	Prod.	Dry	Gas
Allegheny	25	75	1	1
Bradford	64	180	0	0
Middle Field	22	50	0	3
Venango-Clarion	44	63	5	6
Butler-Armstrong	13	32	3	1
Southwest Pennsylvania	24	117	5	12
West Virginia	74	230	14	27
Southeast Ohio	72	589	16	11
Total Sept.	338	1,336	44	61
Total Aug.	422	1,815	52	79
Difference	84	479	9	18

Rigs and Wells Drilling

	Rigs	Drg.	Ttl.
Allegheny	14	18	32
Bradford	14	55	69
Middle Field	1	11	12
Venango-Clarion	4	22	26
Butler-Armstrong	5	17	22
Southwest Pennsylvania	17	52	69
West Virginia	75	139	214
Southeast Ohio	32	66	98
Total Sept.	162	380	542
Total Aug.	165	385	550
Difference	3	5	8

A general decrease in the number of completions, new production and new work was recorded in the fields of Pennsylvania, Ohio and West Virginia in September as compared to August. Completions were 20 per cent less while new production dropped from 1,185 bbls. in August to 1,336 bbls. in September. There were also fewer dry holes and less gas wells.

CENTRAL OHIO

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Fairfield	0	0	0	0	1	2	3
Knox	8	8	3	4	3	2	6
Ashland	3	0	0	3	5	13	18
Medina	6	0	4	2	9	21	30
Lorain	1	0	1	0	2	8	10
Wayne	15	8	7	8	15	30	45
Richland	0	0	0	0	0	1	1
Vinton	2	0	0	2	0	1	1
Hocking	2	0	0	2	2	4	6
Holmes	8	315	2	2	5	11	16
Coshocton	0	0	0	0	2	0	2
Jackson	4	0	1	3	6	8	14
Athens	2	0	0	2	2	3	5
Meigs	0	0	0	0	1	0	1
Gallia	1	0	1	0	0	1	1
Cuyahoga	1	0	1	0	0	1	1
Lawrence	0	0	0	0	1	0	1
Ttl. Sept.	56	331	20	28	54	107	161
Ttl. Aug.	67	218	17	40	63	115	168
Difference	11	113	3	12	1	8	7

September did not prove a very active month in the Central Ohio Field, there being but 56 completed wells, with 20 dry holes, 28 gas wells and 8 oil wells, with a new production of 331 bbls. This is a decrease of 11 in completed wells from the August figures and 12 less gas wells. In new production there was an increase of 113 bbls. and 3 more dry holes.

In new work under way at the close of September, there were 54 rigs up and building, and 107 wells drilling, against the August figures of 53 rigs and 115 drilling wells, a net loss for September of seven.

The only oil production of any value was found in Holmes County.

LIMA FIELD

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wood	16	355	0	1	1	18	19
Hancock	10	169	0	0	2	8	10
Allen	5	107	0	0	0	6	6
Auglaize	3	45	0	0	0	7	7
Sandusky	0	0	0	0	1	1	2
Mercer	15	188	2	0	0	15	15
Van Wert	1	12	0	0	0	4	4
Seneca	3	300	0	0	0	6	6
Lucas	1	3	0	0	0	2	2
Ottawa	4	35	0	0	0	3	3
Darke	10	192	0	0	0	8	8
Hardin	2	10	0	1	0	0	0
Paulding	0	0	0	0	0	1	1
Michigan	1	0	1	0	0	2	2
Ttl. Sept.	71	1,416	3	2	4	81	85
Ttl. Aug.	84	1,442	6	2	6	93	99
Difference	13	26	3	0	2	12	14

Thirteen less completions are reported from the Lima Fields of northwestern Ohio for September than in August, but the new production is 26 bbls. less, indicating better wells from the old producing sands. There were 3 dry holes and 2 gas wells.

September shows 4 rigs up and 81 wells drilling, against the August figures of 6 rigs and 93 drilling wells, a net decrease for September of 14. The active counties are Wood, Hancock, Mercer and Darke, with good prospects of a great amount of work with the opening of spring, if the market shows an upward turn.

INDIANA FIELD

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wells	1	15	0	0	0	0	0
Jay	9	485	0	1	0	18	18
Adams	0	0	0	0	0	1	1
Grant	0	0	0	0	0	1	1
Gibson	1	3	0	0	1	7	8
Pike	0	0	0	0	0	3	3
Sullivan	3	0	3	0	0	3	3
Knox	1	15	0	0	0	0	0
Greene	0	0	0	0	0	1	1
Ttl. Sept.	15	518	3	1	1	34	35
Ttl. Aug.	27	1,132	7	1	2	33	35
Difference	12	614	4	0	1	1	0

September developed into a rather poor month as far as completions in numbers count in the Indiana fields, as there were but 15 wells completed, with 518 bbls. new production, 3 dry holes and 1 gas well. When compared with August, shows a decrease of 12 in completed wells and 614 bbls. new production, while dry holes were 4 less.

There was no change in the totals of new work, the close of September showing 35 wells drilling and rigs up, the same as the close of August.

The real important strike of the month was the bringing in of a gas well in practically virgin territory to the southeast of Portland, in Jay County, which is estimated at 1,000,000 feet, the best gas well found in the Old Trenton Rock section of the State in a good many years.

Jay County maintains the leading development and registered some very nice wells during the month. In the southwestern Indiana regions, a very important test well is under way along the south side of the White River on the W. F. Chapman farm, Section 24, White River Township, Gibson County, far in advance of the Princeton Field. Should this well prove a commercial producer it will add a large scope of virgin territory to develop.

KENTUCKY-TENNESSEE

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wayne	2	10	1	0	0	4	4
Powell	1	15	0	0	0	9	9
Estill	1	2	0	0	0	6	6
Morgan	0	0	0	0	0	1	1
Lee	1	2	0	0	0	4	4
Lawrence-Johnson	9	299	1	0	0	21	21
Johnson-Magoffin	35	387	2	4	0	40	40
Allen	31	425	9	0	0	28	28
Warren	32	455	14	1	0	40	40
Barren	2	25	0	0	0	21	21
Simpson	6	142	3	0	0	10	10

Cumberland-Monroe ..	12	2,255	6	1	0	32	32
Clinton	0	0	0	0	0	6	6
Russell	0	0	0	0	0	5	5
Hancock	5	25	2	0	0	5	5
Ohio	0	0	0	0	0	4	4
Hopkins	0	0	0	0	0	3	3
Owsley	0	0	0	0	0	2	2
Metcalf	5	5	0	4	0	5	5
Henderson ..	0	0	0	0	0	2	2
Greenup	1	10	0	0	1	0	1
Crittenden ..	0	0	0	0	0	1	1
Calloway	0	0	0	0	0	2	2
Union	0	0	0	0	0	1	1
Breathitt ..	0	0	0	0	0	1	1
Montgomery ..	0	0	0	0	0	2	2
Rowan	0	0	0	0	0	1	1
Grayson	0	0	0	0	0	1	1
Elliott	1	10	0	0	0	3	3
Laurel	1	100	0	0	0	2	2
Hardin	1	8	0	0	0	1	1
Muhlenburg.	0	0	0	0	0	1	1
Floyd	2	10	0	1	0	0	0
Graves	0	0	0	0	0	1	1
Pike	0	0	0	0	0	1	1
Tennessee ..	1	0	1	0	0	21	21
Mississippi .	1	0	1	0	0	19	19
Alabama	0	0	0	0	0	13	13
Georgia	1	0	1	0	0	2	2
Ttl. Sept..	151	4 185	41	11	1	320	321
Ttl. Aug..	107	4,817	31	2	0	215	215
Difference	44	632	10	9	1	105	106

September proved an active month in the fields south of the Ohio River in new work under way and completions. These fields include Kentucky, Tennessee, Alabama, Mississippi and Georgia, and for the month show 151 completed wells, new production, 4,185 bbls.; 41 dry holes and 11 gas wells. When compared with August the figures show an increase of 44 in completed wells, 10 dry holes and 9 gas wells, while in new production there was a decrease of 632 bbls.

In new work under way, the close of September shows 1 rig and 320 drilling, against 215 drilling wells at the close of Aguust, a net increase in new work of 105.

There is considerable wildcat work going on in the South at this time. In Tennessee there are 21 tests drilling; Mississippi, 19; Alabama, 13; and Georgia, 2. Work has picked up in portions of the Western Kentucky Field as well as in the Big Sandy section in the entire east end, and much is expected in the Cumberland-Monroe County Field, as the pipe line of the Paragon Development Co. is nearing completion when there will be a market for the product, as most tanks on the various leases are full and have been for some time.

The finding of a monster gas well by the Midas Carbon Co. in Floyd County, will bring about an active drilling campaign, as it is reported at 15,000,000 feet and by far the largest in the State.

Outside of the gas strike the most important find made for the month was the finding of an 8-bbl. well at a depth of 160 feet by Smith and others, on the Russell farm, near Elizabethtown. Five years ago it was predicted that oil would be found in Hardin County, for there is no doubt that the county contains one of the largest structures to be found in Kentucky. The find of oil in Laurel County, the first in the county's history, was during the month in review. Some remarkably large producers were uncovered in Cumberland, Allen and Lawrence-Johnson counties.

ILLINOIS FIELD

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Clark	1	65	0	0	0	4	4
Cumberland.	1	0	1	0	0	1	1
Crawford ...	2	0	2	0	0	3	3
Lawrence ..	3	125	0	0	0	3	3
Marion	1	0	1	0	0	0	0
Clinton	2	0	2	0	0	0	0
Monroe	1	4	0	0	0	4	4
Jasper	0	0	0	0	0	1	1
Coles	0	0	0	0	0	1	1
Wabash	3	0	3	0	4	1	5
Jackson	2	0	0	2	0	2	2
Jefferson ...	0	0	0	0	0	1	1
Ttl. Sept..	16	194	9	2	4	21	25
Ttl. Aug..	26	340	8	3	7	26	33
Difference	10	146	1	1	3	5	8

September developed into a rather quiet month for the various fields of Illinois, as none showed any activity whatever. The best producer found was in the McCloskey sand in Dennison Township, Lawrence County, by the Associated Producers on the Snyder farm, with 100 bbls. Wabash County failed to show anything, while Jackson County is credited with two gas wells which are of great value as fuel for the coming winter.

There were during September a total of 16 completed wells, with 194 bbls. new production, 9 dry holes and 2 gas wells. When compared with August the figures show a decline of 10 in completed wells, 146 bbls. in new production and 1 gas hole, while in dry holes there was an increase of 1.

The net decrease in new work at the close of September was 8, of which 3 were rigs and 5 drilling wells, indicating that the average operator expects to shut down all unnecessary work outside of offsets and wildcat wells.

WYOMING

Summary of Field Operations

District—	Comp.	Prod.	Dry	Rigs	Drg.	Ttl.
Big Muddy	1	15	0	0	9	9
Salt Creek	55	17,760	0	60	143	203
Lance Creek ...	1	0	1	0	7	7
Warm Spgs., etc.	0	0	0	5	18	23
Big Horn Basin	2	10	0	4	25	29
Lost Soldier Dist.	3	2,950	0	12	43	55
Rock River Dist.	0	0	0	2	22	24
Fremont County	0	0	0	5	29	34
Mule Creek	0	0	0	0	3	3
Osage	0	0	0	3	26	29
Natrona County.	1	100	0	2	20	22
Lincoln and Uintah	0	0	0	4	17	21
Baxter Basin ..	0	0	0	3	12	15
Miscellaneous ..	0	0	0	10	43	53
Total Sept....	63	20,835	1	110	417	527
Total Aug.....	46	14,531	1	135	403	538
Difference	17	6,304	0	25	14	11

Gas production, 16,000,000.

MONTANA

Summary of Field Operations

District—	Comp.	Prod.	Dry	Rigs	Drg.	Ttl.
Cat Creek	5	180	1	5	27	32
Kevin-Sunburst .	24	2,343	4	14	55	69
Miscellaneous ..	5	0	4	5	100	115
Total Sept....	34	2,523	9	24	192	216
Total Aug.....	35	1,925	8	27	188	215
Difference	1	598	1	3	4	1

Gas production, 9,500,000.

UTAH

Summary of Field Operations

	Comp.	Prod.	Dry	Rigs	Drg.	Ttl.
Miscellaneous ..	0	0	0	0	24	24

The month of September was exceptionally quiet in the Northwestern Fields. No new fields were discovered and no gushers of extraordinary size were noted in the review of the operations for the month. The summary of work in Wyoming shows a slight falling off in new operations, mainly in the number of new rigs up. An unusually large number of completions was not offset by an equal number of new operations; a gain in drilling wells accounts for the dropping off in rigs, as many listed last month are now in the drilling column. The production added during the month amounts to 20.835 bbls. daily, of which over 17,700 bbls. were credited to the Salt Creek and Teapot Fields, and 2,950 bbls to the Lost Soldier-Ferris district. It is probable that owing to the recent reduction in the price of crude, there will be little activity in wildcat districts until the market rises.

Montana operations show little variance from last month's record; completions are one less in number, with a gain of 598 bbls. in production. Active operations are practically the same in number as at the end of August. The proven area of the Cat Creek Field was extended by the completion of several edge wells; but as the production of these wells is very small, no excitement was occasioned by their completion.

"GAS" SUBSTITUTE RAISES PRICE

The National law calling for the mixture of 10 per cent government alcohol with all gasoline imported into France has entered into force. Under this new regulation licenses must be obtained to import gasoline into France and from October 1 importers must purchase from the government a quantity of alcohol to equal 10 per cent of their gasoline imports during September. Automobile owners will therefore have to use gasoline-alcohol mixture. The price of State alcohol being higher than that of gasoline, it is expected there will be a slight increase in the selling price of gasoline on the French market.

NAMES TRANSPOSED

On page R 58 of the Rotogravure Section in this issue the names under the photographs of William Benbean and C. P. Clark are transposed.

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Fig. 1021 "Ferrenewo" Iron Body Globe Valve

Fig. 73 "Renewo" Bronze Globe Valve

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Fig. 863 "Renewo" Bronze Horizontal Check Valve

Fig. 898 "Ferrenewo" Iron Body Horizontal Check Valve

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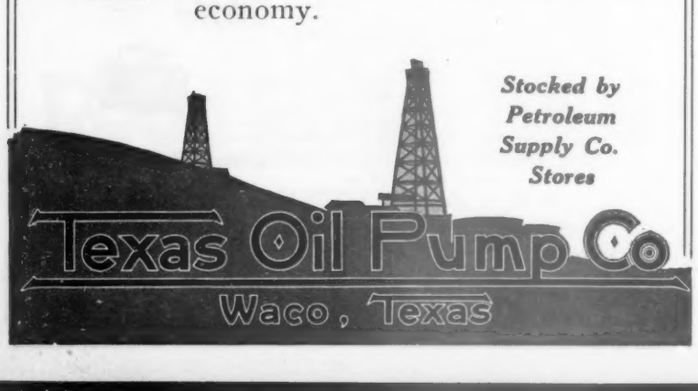

OKLAHOMA FIELDS

(Continued from Page 38)

had stopped flowing, was brought back Sunday, starting at the rate of 175 bbls. an hour.

Barker & Jondahl's No. 1 Kayl, SE cor. SW NE, Section 6-15-8, had a hole full of water at 3,864 feet. The Carter Oil Co.'s No. 2 McDermot, NW cor. SE SW, Section 16-16-9, reported a showing in sand topped at 3,000 feet and drilled to 3,045 feet. The Roxana Petroleum Corp.'s No. 2 Wilson, SE cor. SW SE, Section 8-15-8, which made 756 bbls. naturally, was increased to 1,436 bbls. after a 25-quart shot in sand topped at 3,725 feet, and drilled to 3,807 feet. The Phillips Petroleum Co.'s No. 1 Wisner, NE cor. SW SW, Section 4-15-9, was estimated good for 400 bbls. from sand at 2,897-2,902 feet. The Pure Oil Co.'s No. 7 Yarhola, NE cor. Section 17-15-8, will be shot following good showing in Wilcox sand at 3,687-2,-718 feet. Several good flows were made. The Oklahoma Producing & Refining Corp.'s No. 1 Kernall, SW cor. SE NE, Section 30-14-8, was good for 500 bbls. with some gas from Dutcher sand at 3,387-3,412 feet.

In Okmulgee County, Stinson & Mathews' No. 6 Hagerty, NE cor. SE NE, Section 33-12-12, was good for 250 bbls. of 40-gravity oil from sand at 1,440-94 feet.

Transfer of approximately 10,000 bbls. daily production in addition to thousands of acres of leases by the Waite Phillips Co. to the Mid-Kansas Oil & Gas Co. was accomplished with little excitement. The Waite Phillips Co. will continue to function in Okmulgee, Okfuskee, Creek and other counties south of Tulsa in addition to its Kay County and Kansas properties. The sale will in no way change the company organization. Properties involved in the sale were all north of Tulsa in Oklahoma and comprised 13,119 acres undeveloped leases, 6,900 acres developed leases and numbered 312 producing oil and gas wells.

Tonkawa Output

Daily average output of the Tonkawa Field for the week ended September 26 was as follows:

Company	No. Wells	Output Bbls.
Amerada Petroleum Corp.	34	3,101
Blackwell Oil & Gas Co.	28	3,408
Carter Oil Co.	6	542
Champlin Refining Co.	3	118
Comar Oil Co.	228	23,085
Cosden Oil & Gas Co. & Mar-land Refining Co.	12	453
Gypsy Oil Co.	75	9,738
Healdton Oil & Gas Co.	13	1,619
McCaskey & Wentz	39	3,969
McMan Oil & Gas Co.	2	38
Pennok Oil Co.	25	2,702
Phillips Petroleum Co.	4	495
Prairie Oil & Gas Co.	9	1,226
Sinclair Oil & Gas Co.	1	19
Slick & Comar Oil Co.	31	3,442
Southwestern Petroleum Co.	14	1,102
Texas Co.	4	202
White Eagle Oil & Refining Co.	6	390
Total	534	55,649
Total last week	520	58 614
Difference	14	2,965

Daily average pipe line runs were as follows: Kay County Gas Co., 31,090 bbls.; Ozark Pipe Line Co., 9,565 bbls.; Gulf Pipe Line Co., 8,540 bbls.; Empire Pipe Line Co., 1,150 bbls.; Champlin Refining Co., 1,670 bbls.; Prairie Pipe Line Co., 1,225 bbls.; Producers & Refiners Corp., 485 bbls.; Texas Co., 202 bbls.; Oklahoma Pipe Line Co., 542 bbls.; Bolene Refining Co., 795 bbls.; Golden Rule Refining Co., 370 bbls.

Tests Nearing Levels

Among the many interesting wildcat tests north and west of the Tonkawa Field, several are nearing levels which should carry some interesting information. The Alcorn Oil Co.'s No. 1 Chambers, SW cor. SE, Section 9-25-2w, was fishing at 2,260 feet. The U. S. Cities Oil Corp.'s No. 1 Simmons, NE cor. SE, Section 27-25-2w, was drilling ahead after getting a rainbow of shale or "farmers" oil from shale at 1,750 feet. The Alcorn Oil Co.'s No. 1 Riley, NW cor., Section 5-24-2w, was looking like a disappointment, with nothing encouraging further drilling. Bottom of the hole was below 3,300 feet.

Among other Northern Oklahoma tests, the Alcorn Oil Co.'s No. 1 Nelson, SW cor. NE, Section 7-28-3w, Grant County, on one of the largest blocks assembled, was putting up a poor appearance with the bit down 2,661 feet. The Alcorn Oil Co.'s No. 1 Hubbard, CSL NW, Section 12-26-2w, reported a show from sand at 1,750-62 feet. The Comar Oil Co. and the Gypsy Oil. Co.'s No. 1 Garrett, NE cor. NW SE, Section 31-27-2e, was drilling at 1,705 feet and the Amerada Petroleum Corp. and Alcorn Oil Co.'s No. 1 Elledge, NE SE, Section 32-27-1w, was drilling at 1,000 feet.

Osage County

In Osage County, E. B. Lawson's No. 3, NW cor. SW NW, Section 28-25-8, was good for 200 bbls. after shooting Layton sand from 1,076-96 feet with 100 quarts. The Indian Territory Illinois Oil Co.'s No. 308, NW cor. NE NW, Section 34-25-8, an old well, got 15,000,000 feet of gas in Oswego sand at 2,037-55 feet. The Owen Osage Oil Co.'s No. 250, CWL NW SE NE, Section 34-12-11, was good for 2,500,000 feet of gas; No. 254, CWL NW SE NE, same section, was a machine; and No. 252, CEL SW SW NW, Section 22-23-11, made 4,500,000 feet from Bartlesville sand at 1,633-50 feet. Charles Page and others were building a rig for No. 75, NW cor., Section 1-21-8.

In Creek County, Wood & Farren had 1,500 feet of oil in the hole at No. 1, NE cor. SW, Section 21-17-9, from sand at 2,553-80 feet. The Pure Oil Co. had a rig on the ground for No. 1 Wright, SE cor. NW, Section 19-17-9, and the Bu-Vi-Bar Oil Co.'s No. 1 Wright, CSL NE NE SW, same section, was a rig.

Cook & George had a machine for No. 1, CWL NW NW, Section 5-15-15, Muskogee County, and J. L. Slusher's No. 3, CSL NW NE, Section 27-15-16, was good for 1,000,000 feet of gas at 1,612-50 feet.

In Okmulgee County, Richardson abandoned No. 6 Buchanan, CSL SW NE, Section 31-15-14, after drilling 2,287 feet. The Texolean Oil Co. was spudding No. 2 Hogan, SE cor. NW, Section 14-15-12. The Prairie Oil & Gas Co.'s No. 1 Johnson, SE cor. NE, Section 17-13-15, made 1,500,000 feet of gas at 2,074-76 feet. King and others' No. 1 Morton, NW cor. NE NW, Section 23-13-13, was dry at 2,775 feet.

In Seminole County the Cosden Oil & Gas Co. staked a location for No. 1 Morgan, NW cor. NE NW, Section 28-8-8; R. H. Smith had a rig for No. 3 Swift, SW cor. SE NE, Section 32-8-8, and was building a rig for No. 1 Long, NW cor. NE SE, same location.

The Tidal Osage Oil Co. was moving in tools for No. 1 Baker, SE cor. SW SE, Section 4-9-11, Hughes County.

The Magnolia Petroleum Co.'s No. 2 Davis, C SE NE NE, Section 25-2s-3w, Carter County, made 150 bbls. when plugged back sand at 2,097-2,122 feet. The Humble Oil & Refining Co.'s No. 4 Lester, C NW NW NW, Section 35-2s-3w, was good for 75 bbls. from 2,148-50 and 2,164-67 feet.

In Roger Mills County, the Trio Oil Co.'s No. 1, NE cor. NW, Section 3-13-26w, was dry at 3,036 feet.

Wildcatters were holding up to usual records in the number of operations in the State. The conditions prevalent have affected them less than the larger companies holding inside acreage near recently discovered pools. Several operations have been abandoned, however.

Near Perry in Noble County, the Magnolia Petroleum Co.'s No. 1 Shoot, C NE SW, Section 16-21-1w, was dry and abandoned at 3,330 feet.

Kingfisher County was again the scene of an unsuccessful attempt to find oil. The Casing Royalty Co.'s No. 1 McCord, SW cor. NE SE, Section 14-17-5w, was abandoned at 580 feet.

Southern Logan County also proved unprofitable for further drilling and the Oklahoma Drilling Co.'s No. 1 Baker, SE cor. SW, Section 36-15-2w, was abandoned at 1,975 feet.

Near the Wewoka Field of Seminole County, the Producers & Refiners' Corp.'s

No. 1, SE cor. NW NE, Section 14-7-8, was abandoned at 1,118 feet. The test was being drilled just west of the town of Holdenville, in Hughes County.

In Pittsburg County, Ed Richards and others have displayed their faith for additional oil in the "south country" below Okmulgee, by spudding with a 20-inch hole in No. 1 Townsend Ranch, C NE, Section 29-6-13, about 12 miles west of McAlester.

Pontotoc County was brought to light again by the spudding of Gilbert & Clark's No. 1 Floyd test, SE cor. NW, Section 28-3n-4e.

Southeast of Frederick in Tillman County, the Quanah Oil Co. was spudding No. 1-A Hamon at 40 feet, SW cor. NE SW, Section 35-3s-16w.

Dewey County Test

In Dewey County A. D. Morton has started one of the most interesting of all western Oklahoma wildcat tests. His No. 1 well, C SE, Section 22-16-18w, has been spudded and the drilling is being watched attentively due to its bearing on possible future operations in this section.

In Roger Mills County the Roxana Petroleum Corp.'s No. 1, CWL NE NE, Section 9-16-21w, was drilling at 785 feet. Kellogg and others had a rig for No. 1, NE cor. Section 10-16-21w. These recent operations, in addition to the others previously reported, indicate that there is a tendency to play the western areas, particularly to the north and northwest of recent discoveries in Beckham County.

In Osage County, the Plains Petroleum Co.'s No. 1, C NW, Section 1-23-9, was abandoned as dry after drilling to 2,313 feet. The Sidwell Drilling Co.'s No. 1 Kneeland, SW cor. NW, Section 18-21-7, was dry at 1,801 feet. McNamara and others' No. 2 Scully, SE cor. NE SE, Section 25-21-7, was shut down at 1,800 feet. The Kanola Oil & Refining Co. had a rig for No. 4 Leader, NW cor. SE NW, Section 24-20-7.

The Glavez Oil Co. was spudding No. 1 Bellmard, CEL SE NE SE, Section 33-29-5, just south of the Kansas line in Kay County. George S. Boles drilled his No. 1 Mehojah, SE cor. NW, Section 4-27-5, to a total depth of 2,911 feet and the well is now making 932 bbls., almost as much as its initial production of 988 bbls. Top of the sand was found at 2,877 feet. This forms the present northwestern limit of the production in the extension.

Kiskaddon and others had a rig on the ground for a test in the old "mystery" district around Boley. These operators say they will make a thorough probe. The test is No. 2 Hennehuckee, NE cor. SE NE, Section 17-12-7, Okfuskee County. The Atlantic Oil Producing Co. had a rig up for No. 1 Jackson, NW cor. SW SW, Section 35-11-11.

Creek County Developments

Northern Creek County showed some recent developments. Vincent and others' No. 1 Smith, NE cor. SW, Section 9-14-9, was dry at 3,190 feet. The Sapulpa Refining Co. was spudding No. 2 Sewell, SE cor. Section 34-15-10, and the Independent Oil & Gas Co. had a rig at No. 1 McIntosh, SE cor. NW NW, Section 29-15-10. Kiskaddon and others shut down after getting a show of oil from sand at 2,552-2,615 feet in No. 1 Foster, NE cor. NW, NW, Section 26-19-8. The Malcona Petroleum Co.'s No. 1 Griffin, SE cor. NW, Section 7-19-8, was spudding, while the Sidwell Drilling Co.'s No. 1 Deere, SW cor. SE, Section 23-18-8, was drilling at 950 feet.

Bailey and others' No. 1 Jefferson, SW cor. SE SW, Section 30-19-9, was good for 30 bbls. naturally from sand at 2,538-49 feet. Their No. 2 Jefferson, CSL SE SW, same section, was rigging up and No. 3 Jefferson, NW cor. SE SW, same section, was a rig. The Shaffer O. & R. C.'s No. 3 Smith, NE cor. SW, Section 15-19-9, was drilling at 1,400 feet. Floyd Howarth's No. 2 CNL SE SW, same section, was drilling at 375 feet. The Texas Co.'s No. 4 King, CWL SW SE SW, Section 17-18-9, was finally abandoned on account of a bad casing job. Total depth of the hole was 2,987 feet. The Smith Oil Corp.'s No. 1 Graham, NW cor. Section 4-18-10, was dry at 2,805 feet.

In Creek County, the Transcontinental Oil Co. was spudding No. 1 Mitchell, SE cor. NE SW, Section 22-17-8, and had a rig on the ground for No. 2 Freeman, SW cor. SE SW, Section 14-17-8. Fred Chapman's No. 2 Beaver, SW cor. Section 9-15-8, was drilling at 1,020 feet. Kline, Brann and Shaffer's No. 3 Warnakee, NW cor. SW SW, Section 15-15-8, was drilling at 660 feet and the Bu-Vi-Bar Oil Co.'s No. 1-A Peters, SW cor. SE NE, Section 23-15-8, was drilling at 400 feet, while the Texas Co.'s No. 5 Jacobs, SE cor. NE, Section 27-14-8, was drilling at 540 feet. The Link Oil Co. had a rig on the ground for No. 1 Hicks, SE cor. SW, Section 4-13-8, across the line in northwestern Okfuskee County.

The Waite Phillips Co.'s No. 1 Alec, SE cor. NE SW, Section 27-17-8, Creek County, which started off at the rate of 100 bbls. an hour from sand at 3,299-3,307 feet, has been called a 200-bbl. well, 30 per cent b. s., after considerable misfortune. Gravity of the good oil is 33 degrees. The Belmont Oil & Gas Co. had a rig for No. 1 Richards, SE cor. SE SW, Section 24-16-8, and the Texolean Oil Co.'s No. 8 Richards, SW cor. NE, Section 16-16-8, was drilling at 2,035 feet. The Oklahoma P. & G. Co. was spudding No. 1 Washington, SW cor. NE SW, Section 32-17-8. The Duquesne Oil Co. was spudding No. 2 Walker, NE cor. NW NW, Section 23-17-8e.

New Work in Wewoka

New work continued in the Wewoka Field, making it one of the most active areas in the State. The Dixie Oil Co. was moving in material on a location for No. 1, CSL SW SW, Section 25-8-7. W. R. Ramsey was building a rig for No. 2 Townsite, CWL SW SW NE, Section 19-8-8. The Independent Oil & Gas Co. and others were building a rig for No. 2 Long, CEL NE SW NE, Section 32-8-8.

The Shawnee-Wewoka Oil Co.'s No. 1 Townsite, CNL NW SW NE, Section 19-8-8, was abandoned at 1,594 feet following disappointments in the region. R. H. Smith was building a rig for No. 4 Foster, SW cor. NE NE, Section 32-8-8.

J. W. Moffett and others' No. 2 Frazier, C NE SE SW, Section 16-9-23w, Beckham County, was drilling at 200 feet. Grimes, Little and others had a combination rig for No. 1 Gardner, C SW NW SE, Section 35-9-24w. The Emerald Petroleum Co. was spudding at 45 feet in No. 1 Rolls, C SE NE SW, Section 15-9-23.

Okmulgee County was quiet. Stinson & Mathews' No. 6 Haggerty, NE cor. SE NE, Section 33-12-12, was considered good for 250 bbls. after a 140-quart shot at 1,440-94 feet. Slick & Moffett's No. 6 Hawkins, C SE, Section 6-11-12, also made a 250-bbl. well, flowing naturally from sand at 2,398-2,401 feet. Jillson and others' No. 1 Burgess, SW cor. NE SW, Section 18-12-13, was dry at 2,351 feet.

Garvin County continued to show some interesting developments. The Magnolia Petroleum Co.'s No. 8 Easky, C NE NW NW, Section 16-1n-3w, was dry at 1,990 feet. The Texas & Pacific Coal & Oil Co.'s No. 2 Gann, C SW NW SW, Section 9-1n-3w, was rigging up a rotary. The Magnolia Petroleum Co.'s No. 2 Ringer-Gann, C NW SW SW, same section, was spudding. The same company's No. 2-A Maulding, CWL NW NW SE, Section 16-1n-3w, was good for 120 bbls. naturally from sand at 1,582-1,602 feet, and the same company was building a rig for No. 3-A Mauldin, NE cor. SE, same section. Kennedy and others' No. 1 Popejoy, CWL SW NE SE, Section 3-1n-2w, was dry at 2,006 feet.

Agitating Tonkawa

Deepening and agitating was being practiced in the Tonkawa Field in an endeavor to make the best of a rapidly failing field. The McMan Oil & Gas Co. was cleaning out No. 1 Warren, SW cor. SE, Section 27-25-1w, following a 10-

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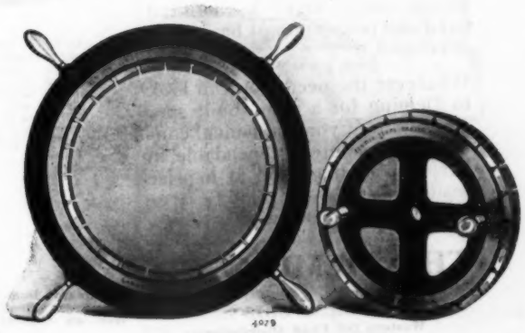

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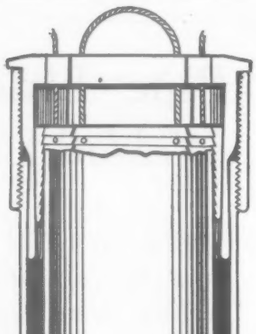

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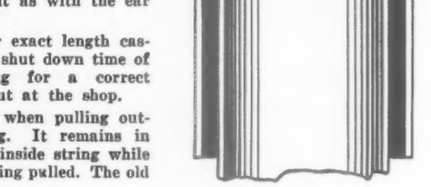

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PUMPS

quart shot in sand at 2,505-10 feet. McCaskey & Wentz increased No. 1-A McKee, SE cor. SW, Section 34-25-1w, from 199 bbls. to 360 bbls. following a 20-quart shot in sand at 2,555-86 feet. The Cosden Oil & Gas Co. and the Marland Refining Co.'s No. 8-A School Land, CEL NE SE, Section 33-25-1w, was running a liner following a show of gas from top of sand at 2,536 feet. On the northwestern edge of what is considered the productive area, McCaskey & Wentz were fishing for casing at 2,549 feet in No. 1 Maloney, SE cor. Section 28-25-1w.

The Comar Oil Co.'s No. 3-B Beverlin, C SE NW, Section 34-25-1w, was good for 389 bbls. naturally from sand at 2,452-2,551 feet. The same company's No. 10 Beverlin, SW cor. NW NW, same section, was swabbing 46 bbls. from sand at 2,510-38 feet, while No. 18 Beverlin, C NE NW, same section, started at 476 bbls. naturally from sand at 2,447-2,535 feet, and No. 20 Beverlin, NW cor. NE NW, same section, made 178 bbls. at 2,488-2,534 feet. The same company's No. 3 Endicott, SW cor. NW SE, same section, was drilled deeper from 2,055 feet to sand at 2,176-87 feet, and made 58 bbls. on the pump; No. 4-C Endicott, CNL NW SE, same section, was swabbing 98 bbls. at 2,427 feet; No. 6 Endicott, CSL SW NW SE, same section, was making 117 bbls. while drilling ahead at 2,211 feet, and No. 9 Endicott, C NW SE, same section, was swabbing 80 bbls. at 1,954-80 feet.

A number of operators are trying small shots with varying degrees of success. The Amerada Petroleum Corp. got no results from a 10-quart shot in No. 23 Goltry, SW cor. NE, Section 34-25-1w, and will shoot again. It was plugged back from sand at 2,108-64 feet. The same company's No. 26 Goltry, an old well, CSL NW NE, same section, made 216 bbls. after a 20-quart shot at 2,452-62 feet. The Blackwell Oil & Gas Co.'s No. 3-B McDaniel, NW cor. SE NE, same section, started at 100 bbls. after a 5-quart shot at 2,172-82 feet, and No. 3-A McDaniel, same location, was not helped by a 5-quart shot, holding to 50 bbls. from sand at 2,420-97 feet.

Southeast of Production

Southeast of production in the Tonkawa area, Griffith & Ash found a show of oil in lime at 2,417-18 feet. They were drilling ahead at 2,420 feet in No. 1 School Lot, SE cor. Section 2-24-1w. The Blackwell Oil & Gas Co.'s No. 7-A Ruzek, SE cor. NE NW, Section 3-23-1w, and old well, was increased from 130 bbls. to 475 bbls. after a 5-quart shot in sand at 2,621-31 feet, and No. 8-A Ruzek, CNL NE NW, same section, an old well, made 210 bbls. after a 5-quart shot at 2,582-92 feet, while No. 10-A Ruzek, C NE NW, same section, was brought from 40 bbls. to 342 bbls. by shooting sand at 2,592-2,605 feet with 5 quarts.

On the western edge of the old part of the field, the Humphreys Petroleum Co.'s No. 4 Plumb, SE cor. NW, Section 10-24-1w, started deeper in search of production in the 3,200-foot sand, still fishing for tools and pipe at 2,676 feet. The White Eagle Oil & Refining Co. had a rig for No. 9 Novotny, CNL NW SE SE, Section 10-24-1w, and the Prairie Oil & Gas Co. had a rig for No. 5-B Novotny, SE cor. NE SE, same section.

The Healdton Oil & Gas Co's No. 2 Rence, CWL NW NW, Section 11-24-1w, was increased from 28 bbls. to 155 bbls. by shooting sand at 2,110-16 feet with 5 quarts. The same company had a rig for No. 14 Rence, CSL SE NW NW, same section, and was rigging up at No. 14-A Rence, CNL, NW SW NW, same section.

The Cosden Oil & Gas Co. and the Marland Refining Co. failed to find production in its No. 1 School Land, NE cor. Section 16-24-1w, and it was abandoned at a depth of 3,319 feet. The Champlin Refining Co.'s No. 1 Law, NE cor. NW SW, Section 27-24-1w, was drilling at 2,625 feet.

Comar Co.'s Operations

The Comar Oil Co.'s No. 9-B Blubaugh, CSL SW SW, Section 2-24-1w, swabbed 90 bbls. at 2,097-2,120 feet; No. 10-A Blubaugh, CSL SE SW, same section, was good for 85 bbls. at 2,544-2,605 feet; No. 18 Blubaugh, CWL SW, same section, started at 136 bbls. at 2,550,80 feet, and No. 7-B Blubaugh, SE cor. SW, same section, was a rig. The same company's No. 12 Gaume, CSL SE NE, same section, swabbed 72 bbls. the first 24 hours from sand at 1,956-97 feet, and No. 16 Ellsworth, CWL SW NE NE, same section, was spudding at 20 feet.

The Comar Oil Co.'s No. 15-B Carmichael, C NE NE, Section 3-24-1w, started off at the rate of 155 bls. from sand at 1,857-92 feet. The same company's No. 12-A Ruzek, NE cor. NW SE, same section, swabbed 98 bbls. at 2,101,19 feet, while No. 15-A Ruzek, CSL SW NE SE, same section, was good for 183 quarts the first 24 hours after shooting sand at 2,082-98 feet with 20 and 40 quarts.

Stephens County continued to give evidence of a fair number of operations. Champlin & Winkler's No. 1 Johnson, NW cor. SW NW, Section 21-2s-7w, was dry at 1,965 feet. The Lone Star Gas Co.'s No. 3 Andrea, C SW SE SW, Section 5-2s-6w, was dry after drilling to a total depth of 3,271 feet. The Magnolia Petroleum Co.'s No. 3 Chandler, NW cor. SE NE, Section 26-2s-6w, was drilling at 980 feet. Fossett & Holmes' No. 7 Cox, NE cor. NW NE, Section 25-1s-9w, was drilling at 1,315 feet.

Several Dry Holes

Several dry holes were completed during the week. The American Pipe Line Co.'s No. 1 Kirk, NE cor. SE, Section 16-1s-8w, was dry at 2,733 feet. Champlin & Winkler's No. 3 Hall, CNL NE NE NW, Section 29-1s-8w, was abandoned as dry at 2,313 feet. Pace Bros.' No. 1-A Wilson, SE cor. NW, Section 12-2s-8w, was dry at 2,210 feet. The Magnolia Petroleum Co. had material on the ground for No. 16 School Land, C SW NW NE, Section 33-1s-8w. The Carter Oil Co. had a rotary rig for No. 5 Ridge, CEL SE SE NW, Section 30-1n-8w. Waldham & Schramm's No. 1-A Adkins, SW cor. SE, Section 14-1n-9w, was drilling at 1,750 feet. The Magnolia Petroleum Co.'s No. 4 Doak, CWL NW SW, Section 6-2s-4w, was abanoned as dry at 1,465 feet.

In Marshall County, the United Oil Co. was rigging up a rotary for No. 1 Holden, CNL NW SW NW, Section 36-5s-6e. The same company's No. 1 Fulton, NW cor. NE, Section 1-6s-6e, was abandoned as dry after drilling to a total depth of 1,568 feet.

In the Brock area of southern Carter County, the Amerada Petroleum Corp.'s No. 2 Griner, NW cor. NE NW, Section 20-5s-1e, was good for 100 bbls. naturally from sand at 2,138-55 feet. The Patsy Oil Co. was rigging up a rotary for No. 2 Palmer, C NE NE NE, Section 6-3s-2w. The Wolverine Oil Co. was rigging up standard tools at 2,172 feet in No. 87 Dillard, CSL SW SW NE, Section 22-4s-2w and was drilling at 2,030 feet in No. 71 Dillard, NW cor. NE, same section.

NEW PRESIDENT OF BRADEN CO.

R. H. Bartlett, recently elected president of the Braden Co., to fill the vacancy caused by the death of Glenn T. Braden, former president, has arrived in Tulsa. He joined the Braden organization in 1905, was associated in the organization of the Oklahoma Natural Gas Co. in 1907, and became treasurer of the company. Due to failing health he resigned in 1919, but recently has been looking after the Braden interests in the Mid-Continent. He has been appointed authorized agent representing the Colonial Trust Co., of Pittsburgh, Pa., executor of the Braden estate.

KENTUCKY-TENNESSEE

(Continued on Page 207)

Grove to the Abe Hoover farm. The Newman Oil Co. has made a contract for the drilling of a well on the Brown lease just out of Pellville. If it proves to be a producer it will open up a considerable amount of territory which has been under lease for a number of years, but upon which there has been no development.

To the southwest of Beech Grove, at Penrod, in Muhlenberg County, the Wood Oil Co. got its third duster in the 1,00-foot sand.

Jefferson County Well Failure

The well near Underwood, Jefferson County, drilled by the Pigeon Roost Oil & Gas Co., to 2,000 feet and shot with 150 quarts of nitro, was abandoned. No. 1 was also a dry hole. It is reported this company will start its third test in the near future.

Warren County Development

The deep test drilled by E. M. Treat & Co. on the Doyle farm in the northeast extension area of Warren County, was shot with 60 quarts at 1,025 feet and showed for 25 bbls. flush. This test was plugged back from 2,809 feet. In this same area the Gale Oil Co.'s No. 2 B. Stiles, is dry at 1,246 feet. Shale was found from 1,040-1,145 feet and the sand from 1,234-1,246 feet.

The deep test drilled on the Phillips farm by the Texas Radio Syndicate No. 1, in eastern Warren County, was put pumping after a special packer was set at 2,370 feet to shut off water. It has been pumping on and off since September 20, and is still making water.

Makeever Bros., of Boston, Mass., finished No. 3 Young, in the Sandidge Pool, for 12 bbls. at 593 feet, sand from 554-570 feet. This makes 31 straight producers for these people in this pool. On the Sandidge, 21 wells are pumping, 7 on the Shield, and 3 on the Young, at an average depth of 560 feet, and are making 2,800 bbls. monthly.

In the Penner district, east of the Waller-Runner Pool, J. C. Barnett got a dry one in No. 1 Hogan at 490 feet. This was drilled as an offset to No. 1 Wick White, completed some time ago for 20 bbls. O. J. Daugherty is cleaning out No. 1 on the Penner, after which he will start No. 3.

In the Rockfield section, the Cadet Oil & Gas Co.'s No. 4 Connelly, was dry at 1,246 feet.

Metcalf County

The bringing in of a big gas well on the E. H. Alexander farm, near Knob Lick, in Metcalf County, has caused all eyes to turn in that direction.

A company has already been formed to pipe the gas to Edmonton, the county seat. This well is in line with two gassers near Hisseville, in Barron County, recently acquired by the Glasgow Co. Over the Barren County line, at Wisdom, Senning & Border abandoned Nos. 1 and 2 J. W. Galloway at 550 and 560 feet, respectively. In the Knob Lick vicinity, the Knob Lick Oil & Gas Co. got a gasser in its No. 3 Anderson.

In Barren County, Lewis J. Emery, Jr. & Sons, got a 3-bbl. pumper in No. 54 Button at 312 feet. In the same vicinity, White & Moore of Bowling Green, Ohio, got a dry hole on the Adams farm at 300 feet.

Cumberland County News

No. 5 Lela Keen of W. S. Raydure, in the Bear Creek district, has been abandoned at 1,450 feet. The Martsolf Fuel Products Co. is shut down at 525 feet with a good showing in No. 1 Sam Brunton. E. M. Treat & Co. has a good showing in No. 1 Sam Riddle at 625 feet, 281 feet below the black shale. The well was drilled to a total depth of 815 feet where a big flood of sulphur water was found.

At Sulphur Creek, Hook, Ross & Wise got a duster at 750 feet, 150 feet below the Pencil Cave formation in No. 2 J. B. Riddle. Rig is being moved to the Sam Riddle farm for a test. W. S. Raydure's No. 2 John Riddle, is showing for a good well in the stray sand at 240 feet. As it has not yet been tested its production is yet unknown. The Kanawha Oil Co.'s No. 1 Williams encountered a large flow of gas at 500 feet which caused the salt water at 440 feet to flow.

At Kettle Creek

Pederson & Co.'s No. 2, Kim Crawford, one-half mile up Kettle Creek from the Kerr wells, is reported making 20 bbls. at 334 feet. Same parties' No. 1 Poindexter was abandoned at 350 feet. W. S. Raydure's No. 1 Sam Smith, at Dooley's Hill is dry at around 500 feet. The Young Oil Co. has a 5-bbl. showing in the stray sand at 160 feet in its No. 1 J. R. Poindexter.

Allen County Wells

During the week in the Allen County Field only two producers are shown out of a total of nine completions. In the Gainesville district, Burton Bros. got an 8-bbl. pumper in No. 7 Burton Bros.' 100 acres, at 365 feet. T. Sheridan's No. 15 F. Gibson, dry at 345 feet; M. B. W. Syndicate's No. 6 F. Gibson, dry at 367 feet; O. J. Johnson's No. 8 N. Johnson, dry at 342 feet. In the southwest district, the Toronto Oil Syndicate's No. 19 T. K. Brown, is showing for 12 bbls. on power at 362 feet; C. A. Phelps' No. 19 Pat Edmonds, dry at 469 feet; Polk-Caldwell Oil Co.'s No. 5 M. B. Chism, dry at 297 feet; Simpson & Stentz have abandoned the deep test on the W. Clark farm at 1,950 feet. In the Mt. Aerial district, Goad & Paull's No. 1 Gibson, dry at 500 feet.

Tennessee Wells

In Clay County, Tennessee, Bushaw and others' No. 1 Overstreet has been abandoned at 740 feet. No. 2 is in course of drilling.

The Kentucky-Tennessee Oil & Gas Syndicate's No. 1 Overhall, 7 miles southwest of McMinnville, in Warren County, has been abandoned at 750 feet. Several gas flows were found in drilling and one oil show at 500 feet.

John Moran, of Lancaster, Ohio, drilling on the Stribling farm, near Lawrenceberg, Tenn., in Lawrence County, is resetting casing at 1,770 feet. No. 1 was drilled to 2,127 feet and shot in 40 feet of pay with 60 quarts. It showed quite a bit of oil through a hole full of water, which had not been cased off. No. 2 drilled 1½ miles south of No.1 and No. 3, was dry at 2,965 feet.

It is reported that the well drilled by the Dixie Oil Co., subsidiary of the Standard Oil Co. of Indiana, on the Wilcox farm near McRae in Wheeler County, Georgia, was abandoned at 3,384 feet.

CALIFORNIA REFINERY AUGUST STATISTICS

Thirty-nine refineries operating on September 1, 1923, with an indicated capacity of 435,652 bbls. of crude oil, reported to the United States Bureau of Mines for the month of August. These 39 refineries operated on a 91 per cent basis of their crude oil capacity.

Output of Refineries in California for August, 1923

Oils run to stills, bbls.:	
Domestic crude	13,505,221
Casinghead gasoline	90,828
Total oils run	13,596,049
Refined products:	
Gasoline, gals.	109,165,919
Kerosene, gals.	16,399,772
Gas and fuel oils, gals.	323,676,544
Lubricants, gals.	7,072,812
Wax, pounds	.....
Coke, tons	.....
Asphalt, tons	46,595
Other finished products, gals.	5,546,705
Losses	9,223,113
Net production of domestic partly refined oils, gals.	85,079,484

Stocks on Hand at the Refineries in California, August 31, 1923

Crude oil and partly refined products, bbls.:	
Domestic crude	3,799,500
Domestic partly refined	10,307,579
Total oils to be run	14,107,079
Finished products:	
Gasoline, gals.	153,605,104
Kerosene, gals.	23,275,804
Gas and fuel oils, gals.	489,170,434
Lubricants, gals.	13,186,679
Wax, pounds	166,424
Asphalt, tons	11,785
All other finished products, gals	345,401
Gross production of tops, gals.	53,473,369
Gross stocks of tops, gals.	334,552,846

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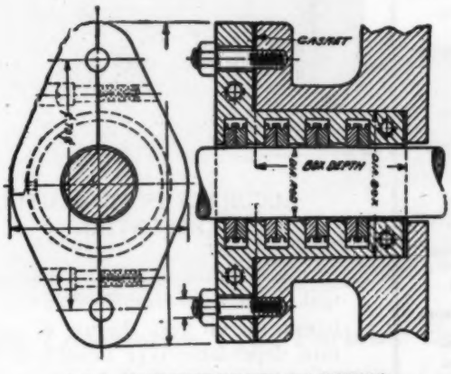

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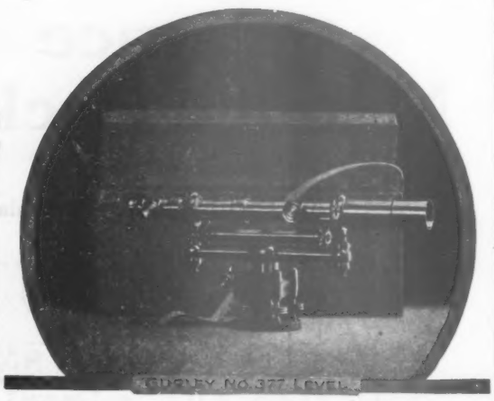

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GULF COAST

(Continued from Page 42)

cated within the proven area. The most interesting test in the district at this time is the Jarmon Oil Co.'s No. 1 Moore, 1½ miles southwest of production. Casing was set at 2,145 feet and the crew is now taking a core of the formation at 2,165 feet. Thompson and others' No. 1 Blackwell is showing gas at 1,900 feet, as is the Fensland Oil Co.'s No. 1 Whitsley, 8 miles south of Luling, at 3,035 feet. Armstrong Bros. have started the first of six tests contracted for on the Dunlap and other leases, south of the test on the Robinett, which is listed as a failure. A rig is in for No. 1 Dunlap. Two deep holes and four shallow tests will be drilled.

Luling Contractors

Contractors in the Luling Field are getting $3 per foot and some as high as $3.25 per foot. The drilling is considered easy, only one hard rock formation being encountered and the wells are completed within 30 days. To date the Magnolia Petroleum Co. is the only one of the larger companies that is doing any development work in the field, although the other big corporations are represented as lease holders. The United North and South Oil Co. opened the field and has done the bulk of the work. Recently that company and the Magnolia company entered into a financial arrangement, whereby the Magnolia advances money for operations and handles the production developed. It has posted a price of 50 cents per barrel.

The Grayburg Oil Co. (Dr. F. L. Thompson and associates) has been active in drilling. The Grayburg has a refinery at San Antonio and ships its production by tank cars to the plant. The Caldwell Oil Co., with production on the Hardemann lease, has increased its capital stock from $50,000 to $100,000 and moved its offices from Paris Lea to Gonzales. Residents of Gonzales, Lockhart and Luling have been prominent in the development of the field until recently when operators in the Somerset Field started moving in rigs from that district.

Wildcats

The Fensland Oil Co. abandoned No. 1 Baldwin in Victoria County at 1,600 feet. It is the second hole drilled by that company in the county.

Late Completions

End of the week completions in the Gulf Coast pools added very little to the sum total of new production for the past seven days. In the Hull Pool, the Republic Production Co.'s No. 2 Dolbear, a re-drilled hole, bailed saltwater at 2,950 feet. Its No. 70 Dolbear is making 100 bbls. of fluid, 40 per cent sediment and water at 2,950 feet. The Eagle Point Oil Co. abandoned No. 2 Devore. On the south side of the dome the Sun Oil Co.'s No. 9 Carr is bailing at 1,200 feet.

In the Orange Pool, the Brownie Babbittee Oil Co.'s No. 5 McLean declined to 900 bbls. per day, after coming in with an initial flow of 2,000 bbls. early in the week. The Orange Petroleum Co.'s No. 8 Winifree is making 800 bbls. of fluid, 10 per cent sediment and water at 3,590 feet. The Gulf Production Co. abandoned No. 5 Kishi-Lang at 3,300 feet. The Humble Oil & Refining Co. has reduced its operations in the pool to two rigs.

The West Columbia Pool records two saltwater holes, both being drilled deeper. The Humble Oil & Refining Co.'s No. 1 Robinson, north of the Abrams, got the saline fluid at 3,235 feet and same company's No. 6 Tyndale-Wyoming at 2,800 feet.

In the Goose Creek Pool, the Sun Oil Co.'s No. 4 Wright is pumping 50 bbls. at 2,490 feet, after being worked over. The Gulf Coast and Crown Oil & Refining Co.'s joint No. 38 Galliard, a deep test, bailed saltwater at 4,600 feet. The Humble Oil & Refining Co. abandoned No. 51 Smith at 2,775 feet. It is on the east side of the pool.

The Grubstake Investment Co. has contracted for six wells on the Lark lease in McMullen County to be drilled to 775 feet, one to be completed every 25 days. They will offset the gasser of the Southern Natural Gas Co. on the Jacobs reported last week at 10,000,000 feet. The gas company supplies San Antonio.

Milam County

In the shallow sand section of Milam County the Lee Oil Co.'s No. 7 Neiham is a 25-bbl. well at 800 feet, one of the best completions in months. Glass Bros. have a 20-bbl. producer in No. 10 Moore. The Iron Mountain Oil Co.'s No. 1 Colter is a 10-bbl. well.

MID-CONTINENT DROPS BELOW MILLION BBLS.

(Continued from Page 17)

Smitherman & McDonald's No. B-2 Saxon is making 300 bbls. The other wells were in the Norphlet district. Five producers and one failure was the record of the Ouachita County area. Three of the producers are in the recently opened territory in the extreme west edge of the field.

North Central Texas

A near completion of importance is reported from Breckenridge, Texas, it being the Miller Bros.' No. 1 Boyett near the west edge of Stephens County, which is said to be making 700 bbls. from the 3,600-foot level. In the Sunshine State Pool, Archer County, the Bridwell & Heydrick No. 1 Carter Bros. swabbed and flowed by heads at the rate of 700 bbls. daily, later settling to 400 bbls.

Mexico

The Penn Mex Fuel Co. completed a 3,500-bbl. producer in the Alamo pool. The Huasteca Petroleum Co. brought in a 5,000-bbl. well in its No. 12-A Juan Casiano. Two tests in the South Field were abandoned as failures, they being the International Petroleum Co.'s No. 7 Agua Nacida and the Cortez Oil Corp.'s No. 4 Aguada.

TANK ORDERS PLACED; INQUIRIES FOR PLATES

PITTSBURGH, PA., Oct. 1.—The Pan-American Petroleum Co. has ordered 13 tanks of 100,000 bbls. and two tanks of 80,000 bbls. capacity from the Chicago Bridge & Iron Works, requiring 6,000 tons of plates. The Graver Corp. of Chicago has received tank orders from the Invincible Oil Co. requiring 1,200 tons of plates, from the Utah Oil Co. requiring 600 tons, and from the Independent Oil & Gas Co. and related interests requiring 3,200 tons.

There is little active tank inquiry at present but it is said much business is in sight which may be put under negotiation shortly.

PANHANDLE REFINING MOVES

DALLAS, Texas, Sept. 30.—The local headquarters of the Panhandle Refining Co. will be moved from the Magnolia Building here to the Staley Building at Wichita Falls on November 1, according to an announcement of local officials. The change will be made so the main offices will be nearer the center of the activities of the company which has a refinery at Witchita Falls and also a large amount of production in Wichita, Young and adjoining counties. The company will occupy an entire floor of the Staley Building. It is taking space formerly occupied by the American Refining Co., which this week is moving its offices to the City National Bank of Commerce Building at Wichita Falls.

"PARCO" USED BY WINNER

"Parco" gasoline—trade name for the product of the refineries of the Producers & Refiners Corp.—was used by Glen Shultz recently in winning the World's Hill Climbing Championship at Pikes' Peak, Colo. Mr. Schultz not only won the race but his time was the fastest since 1916.

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Tasmania Reports Scramble for Oil; Rush for Licenses

Mail advices from Hobart, Tasmania, state: The whole of the country northeast of Latrobe has been scoured for oil. During the past six months the northwestern Warden of Mines has issued 34 permits to prospect for oil, and nine applications for licenses or leases have also been received. These applications apply only to the country east of Latrobe. T. McDonald, a veteran prospector, is very confident of success, as he has discovered a real oil seepage, and has taken up some 5,000 acres of land. According to Mr. McDonald's investigations, the oil will be found further east than the existing boring operations, and it may be on the east side of Port Sorrell. The Adelaide Oil Exploration Syndicate, which has put down some eight bores, extending from Native Plains, near Railton, in the South, to Spreyton in the Northwest, where a water gusher was struck, is now vigorously boring on A. Hilles' property at Thirlstone, only about a mile and a half to the east of the big bore which the Mersey Oil Company is putting down, and from which bore Captain de Hautpick is so confident of results.

Boring by the Adelaide Syndicate was recently interrupted while additional casing was secured from Melbourne, but the work has been resumed and the operations are being hurried as much as possible. The bore is down 600 feet, and the indications are declared to be most favorable. The bore has met with petroleum wax, which, though not a "sure indication" of the presence of liquid oil, is a more hopeful indication than anything previously met with. There are some half-dozen men engaged at the bore, and the field superintendent, J. T. Moate, who has had much experience in oil boring in various parts of Australia, is very pleased with the prospects.

Work is proceeding vigorously on the Hermitage property, some 7 miles from Latrobe, where the Mersey Valley Oil Co. is putting down a bore 10 inches in diameter. This type of bore is called a well and will be sufficient for commercial purposes should a gusher be located, while, owing to its large diameter, the company will be able to bore to a depth of several thousand feet should the company on the prospects consider it to be worth while. They have reached a depth of about 140 feet, and have met with indications similar to those reported by the Adelaide Syndicate. The bore has gone through some 12 feet of oil-bearing clay, which on having a lighted match applied to it, burns with a strong flavor of oil. Boring operations are proceeding day and night.

STANDARD-SHELL DEAL WITH RUSSIA DENIED

A reported agreement between Standard Oil and Royal Dutch-Shell to cooperate in any negotiations with the Russian Soviets is discredited by Standard Oil officials in London.

The Royal Dutch contract to buy 70,000 tons of kerosene from Russians has lost its value through the decline in prices. The Russian price was about 90 shillings a ton for the kerosene landed in England, 15 shillings above the cost of landing American kerosene. Up to the present there are no signs of carrying out the contract. Similarly, the Anglo-Russian company recently formed with Sale & Co., large British firm, has virtually been given up because of lack of harmony.

No light is obtainable, London reports say, on the report that during their recent visit to Russia the Sinclair people became interested in the Barnsdall operations in Russia, from proceeds of which work the Soviet expected to develop former foreign oil holdings in the Baku and Grosny Fields.

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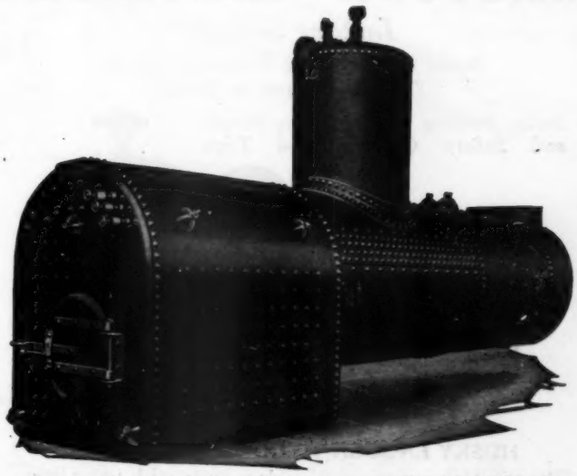

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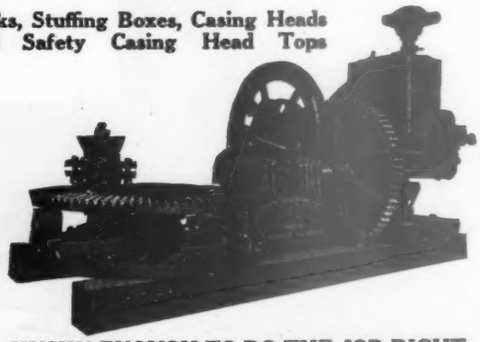

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JENSEN SEES CALIFORNIA'S SURPLUS END

(Continued from Page 148)

less than 2,000 bbls. per day. A deep sand has been found on one of the domes, but the physical condition does not promise it will furnish any large quantity of oil. It will take from four to six months for other wells to prove the value; it will be a year before any added oil will be produced. Estimated January 1924 production is 11,700 bbls. a day. Estimated December 1924 production is 10,100 bbls. a day.

The Richfield Field is producing 16,500 bbls. of oil daily from 176 wells, spaced one well to each 4.4 acres. A deeper sand has been found in the southeast anticline. It is capable of producing about 300 bbls. of heavy oil. This discovery will not materially change the amount of oil the field will produce. Estimated January 1924 production is 15,000 bbls. a day. Estimated December 1924 production is 11,900 bbls. a day.

Torrance-Redondo

The Torrance-Redondo Field is not an old field. It has 33 producing wells from which 4,500 bbls. per day are secured. The best well is only producing 900 bbls. per day. This is in an area where many small lots exist. Since July, six more wells have been brought in, and the daily production is 6,000 bbls. If wells no larger are secured, the field will in no way be an important factor and will hardly make up for the decline in production of older fields. While the true position of the structure has not been found, most of the land is held in large tracts and is under lease to large companies that will not drill it too rapidly. Deeper sands may be found, and when the crest of the structure is located, larger wells will be secured. Estimated January 1924 production is 8,000 bbls. a day. Estimated December 1924 production is 25,000 bbls. a day.

The new Compton Field is the latest discovery. Unquestionably this will eventually be a companion field to Huntington Beach and Signal Hill. Geological conditions are much the same. Dominguez Hill, site of the discovery well, is much more prominent topographically than the elevation at Huntington Beach. The discovery well came in at 950 bbls. per day, and has increased to about 1,300 bbls. Deeper sands may be expected, and larger wells. Estimated January, 1924, production is 1,000 bbls a day. Estimated December 1924 production is 10,000 bbls. a day.

Wheeler Ridge

The presence of the undeveloped fields at Wheeler Ridge, Torrance and Compton will not affect the present peak. Santa Fe Springs required from October 28, 1921, until January 1923 before it was able to produce 90,000 bbls. a day. Long Beach required from June 1921 until January 1923 before it was able to produce 100,000 bbls. per day. Huntington Beach required from June 1920 until January 1923 before it was able to produce 80,000 bbls. per day.

More than a year's time was necessary to bring each of the big Southern California fields from relatively no production to 100,000 bbls. The cause of this rapid increase in production from these three fields was that each was located in an area consisting almost entirely of small parcels of land. This caused the close spacing of wells, and rapid competitive drilling. Even should the three new areas be drilled as rapidly, it would take a year before they would be factors of material importance. Fortunately each of these three fields contains many large tracts of land. The companies holding leases on these tracts have always conducted their operations in a conservative manner, and with respect to the general oil situation. Drilling requirements on their leases are particularly liberal. The fields will therefore not be drilled rapidly, but rather slowly. They will not reach their peak of production for at least two years, and when this peak is reached, it will not be as high as the peaks of Santa Fe Springs and Signal Hill.

The production of California will fall below its indicated future consumption. There will be a shortage of production, and intensive drilling of these fields, rather than conservative drilling of them, may be necessary to make up the difference. The difference between consumption and production will therefore represent a margin of safety to take care of any intensive development that may occur in the new fields in the areas where small parcels of land exist and rapid drilling may be necessary.

Question of Pumping

While the success of pumping in the Santa Fe Springs is by no means assured, wells are now pumped in California from a depth of 4,000 feet by using two pump barrels, one at the bottom of the hole, and one half way up the hole. If fluid levels in Santa Fe Springs wells are found between 3,000 and 4,000 feet, the wells probably will be pumped. Engineers of supply companies are now at work on the problem. It may be assumed that wells will go off production as flowing wells at about 200 to 300 bbls., and will then begin as pumpers at about the same rate. Such an assumption will tend to show more production than will probably be secured. The same remark applies as to pumping deep wells at Signal Hill and Huntington Beach.

Most recent developments in the western part of the Santa Fe Springs Field indicate that no wells producing more than 6,000 or 7,000 bbls. may be expected in the future. The lower limits of the oil zone have been proven by finding edgewater 300 feet below the top of the zone. The zone is hardly more than 300 feet thick instead of the 600 feet established on the crest of the dome. Deep wells, even near the crest of the structure are already affected by edge water in the lower sands. The townsite is showing a marked decrease in gas pressure. It is thought that the partially drilled northwest end of the field will lose part of its gas by migration to the townsite.

Signal Hill

The Signal Hill Field has a remarkably thick oil zone and protection against the infiltration of water has not been based on uniform shutoffs. Only one shutoff was necessary at the top of the oil zone. Edgewater has been avoided by merely drilling deeper, cementing another string of pipe, and bringing in a well. But this cannot go on indefinitely. Eventually the field will have to pay for such practice. Water will be able to migrate from deep shallow wells to deep wells with shallow second shutoffs. This will cause a more rapid decline in old production than has been assumed and may even result in destroying new production.

The desire to drill deep has existed in all of the fields upon the theory that the deeper one drilled, the better the production. At Huntington Beach this resulted in securing edgewater in the lowest sands. At Santa Fe Springs, even in the townsite, the same result was secured. At Signal Hill, the enthusiasm for deep drilling is still manifest. The operator who fails to get to the supposed bottom of the zone because of the physical condition of his well, may eventually be more fortunate than his neighbor who bores his way down.

Actual and Estimated

The following table shows the actual and the estimated future production of these fields separately and added together for a total, during the years 1923 and 1924.

1923—	Huntington Beach	Long Beach	Santa Fe Springs	Total
January	92,000	110,000	88,000	290,000
February	112,000	124,000	107,000	343,000
March	117,000	133,000	160,000	410,000
April	115,000	142,000	207,000	464,000
May	111,000	168,000	224,000	503,000
June	111,000	198,000	263,000	572,000
July	113,000	206,000	312,000	631,000
August	105,000	230,000	332,000	666,000
September	94,0000	264,000	344,000	702,000
October	75,000	274,000	320,000	669,000
November	63,000	272,500	287,000	622,500
December	58,000	240,000	252,000	550,000

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New York Kansas City Los Angeles Tulsa Refinery: Barnsdall, Ok.

1924—	Huntington Beach	Long Beach	Santa Fe Springs	Total
January	54,000	205,000	216,000	475,000
February	52,500	171,500	184,000	407,500
March	49,000	128,000	154,000	331 000
April	46,000	101,000	130,000	277,000
May	44,000	84,000	113,000	241,000
June	42,000	75,000	102,000	219,000
July	38,000	64,000	92,000	194,000
August	35 000	56,000	82,000	173,000
September	33,000	48,500	72,000	153,000
October	29,000	4,2500	62,000	133.000
November	27,000	36,000	52,000	115,000
December	25,000	31,000	42,000	98,000

The results of the analyses made above may now be assembled and included in a single table of estimated production of California which is submitted for the year 1924. This shows a steady decline from 734,500 bbls. in January to 373,600 bbls. in December.

Estimating Consumption

The only remaining element now to be considered is the question of consumption. During 1920 the consumption of the State rose from about 300,000 bbls. to 335,000 bbls. per day. During 1921 the consumption declines from 335,000 bbls. to about 245.000 bbls. at the time of the strike in October, but the year ended with a consumption of 270,000 bbls. The year 1922 saw an increase of consumption from 270,000 bbls. to nearly 450,000 bbls. During 1923 consumption remained below 450,000 bbls., but well above 400,000 bbls. with a tendency to increase regularly. Consumption in August was 550,000 bbls. This was due to summer conditions. Many small refineries in Southern California placed all of their production on the market without attempting to store any of it.

The consumption of oil during the next year will depend upon conditions generally, in the West. California oil is used extensively in Arizona and Nevada in the copper industry. Railroads in the Western States that considered giving up the use of fuel oil during the shortage of a few years ago are now using it more extensively. Shipping on the Pacific is increasing. The many vessels built by the Government during the war use fuel oil. The automobile industry has flourished. It seems fair to assume that all of these industries are on a substantial basis and that their trend is upward. They should use more oil.

Will Balance in July

Neglecting the sharp increase in consumption of August, and assuming a very gradual change it appears that consumption will increase regularly from 440,000 bbls. in September, to 450,000 bbls. for July, 1924. At that time, and at that amount, consumption will equal production. There will be no more oil for storage and no more oil for shipment through the Panama Canal without drawing on the oil that will have been placed on storage up to that time. Thereafter consumption should continue at about 450.000 bbls. per day, while production should decline regularly.

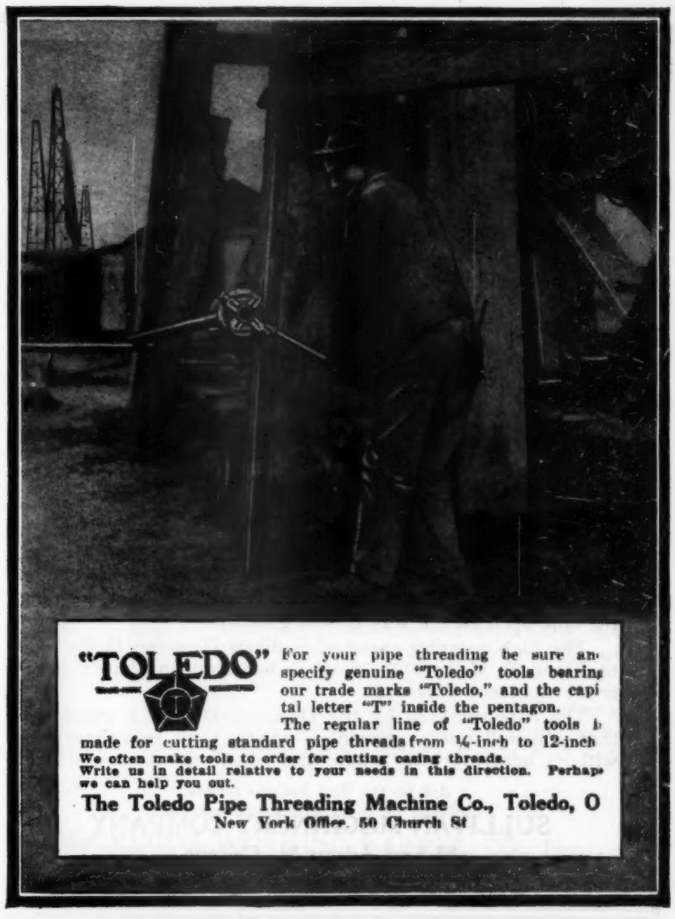
Optimistic Conclusion

When it appears evident next spring that production will probably fall below consumption, it is highly probable that the development of the new fields at Torrance, Compton and Wheeler Ridge will be speeded up during the spring and summer of 1924, in order to take care of the deficiency. Should this be done the estimates herewith will not be realized.

The outlook for the future is definite enough, however. Our visitors from the East who have come to study conditions in California, may return home with a more optimistic feeling that the end of over production in California will come within the next year. Those of us at home may feel that the heavy load now being carried by the oil industry will be reduced in another six months. The public generally perhaps does not appreciate that those organizations exerting themselves to store and retain oil in California are performing a genuine public service for our State since that oil will be needed before the close of 1924.

CANADIAN GASOLINE REDUCED

Imperial Oil Co., Ltd., subsidiary of the Standard Oil Co. of New Jersey, and other Canadian oil companies have reduced gasoline at retail 1 cent a gallon, to 28 cents.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For your pipe threading be sure and specify genuine "Toledo" tools bearing our trade marks "Toledo," and the capital letter "T" inside the pentagon.
The regular line of "Toledo" tools is made for cutting standard pipe threads from ¼-inch to 12-inch
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Write us in detail relative to your needs in this direction. Perhaps we can help you out.
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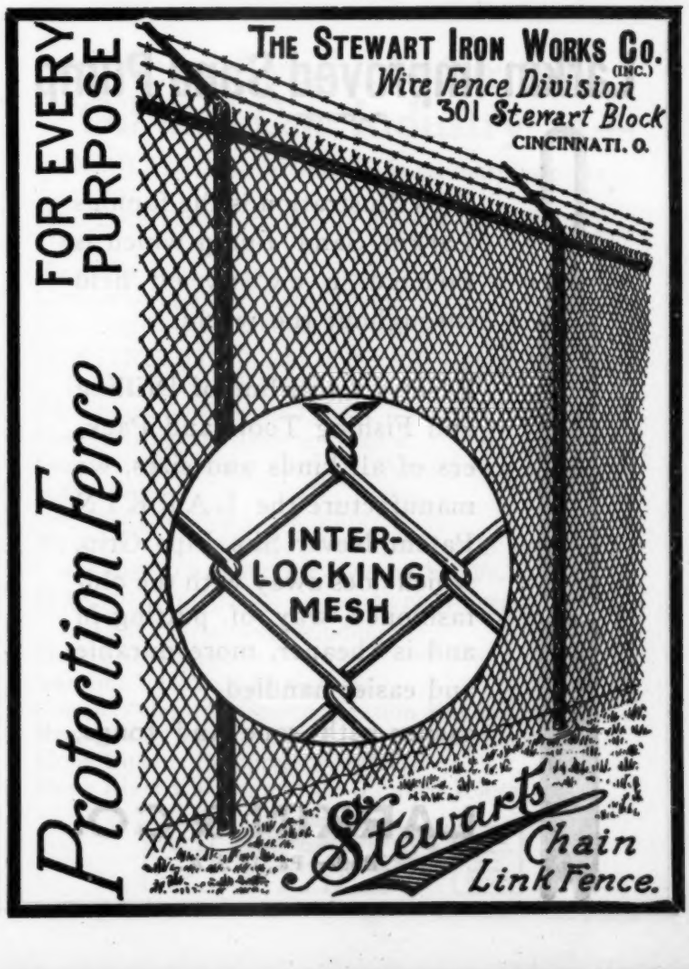
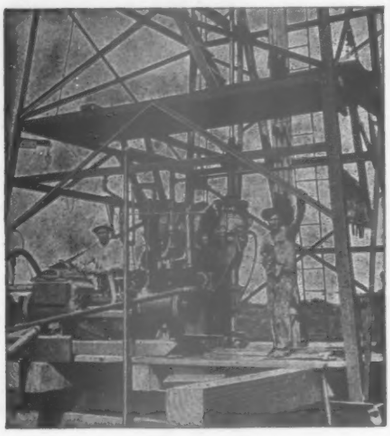


As For Soft Ground—



They Kept This Hole Open 2,000 Feet With Mud Fluid

A Sullivan Diamond Drill crew in the Tampico, Mexico, Field recently set 6⅝-inch casing at 1,100 feet, then went on with 6-inch fish tail bit and mud fluid to 3,141 feet, keeping the hole open all the way in soft ground.

The high rotating speed of Sullivan Diamond Drills (200 to 300 R. P. M.) enables them to use mud fluid more effectively than any "rotary."

The core removed by the Diamond Drill is a guarantee that you will not penetrate oil sands, (and seal them off) without knowing just "where and when" these were struck.

Ask for Oil Well Bulletin 1569-O

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Larkin Improved Sand Pump

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This illustration is the famous Larkin Sand Pump which is found in every oil field throughout the world.

Besides a full line of Drilling and Fishing Tools and Packers of all kinds and sizes, we manufacture the LARKIN Patent Never Slip Pipe Grip, which does away with the old-fashioned way of putting in and is cheaper, more durable and easier handled.

casing with rope and tongs,

LARKIN & CO.
Butler, Pa., U. S. A.

Coastal Producers Point Publicity Way To Pennsylvanians

HOUSTON, Tex., Oct. 1.—The plans of producers of Pennsylvania grade crude to adopt a publicity campaign with the object of calling the attention of dealers and consumers to the value of products manufactured from that grade of crude, is attracting the attention of those interested in the heavy gravity Gulf Coast product from a part of which a superior grade of lubricating is manufactured. The advances that have been made in Gulf Coast crude and its classification from the fuel oil stage to a lubricating basis within a period of nine years best illustrates the value of publicity and its effect upon refiners, dealers and consumers.

An analysis of Humble, Saratoga, Sour Lake and other coastal crudes was printed in The Oil and Gas Journal in October, 1914. These gave the gravities, the percentages of gasoline, kerosene, lubricating and fuel in each five-gallon samples from the various pools, together with subdivisions of the lubricating content, such as cylinder, light engine, heavy engine, red and neutral, as shown by the results of laboratory tests. It was the first time such information had been made public and immediately attracted the attention of refiners all over the country.

Previous to that time the coastal product had been classed as "fuel oil" and producers sold their output under the contract method, whereby the pipe lines took the output for a period of six months or one year at a stipulated figure. At the time of the publication of the analysis coastal crude was sold for 40 cents per bbl., producers obligating to sell at that price for one year. The refining capacity of the Gulf region was limited to two plants at Port Arthur, one at Beaumont, one at Texas City and two smaller plants that had been idle for years.

Brought Prompt Response

The value of publicity manifested itself when the producers, through their associations, sent copies of The Oil and Gas Journal containing the analysis to refiners throughout the country and offering to send them any amount of the crude for test runs through their plants. Responses came from St. Louis, Chicago, Pittsburgh, the old Pennsylvania oil regions, and from the Atlantic Coast. At first small shipments of one or two cars were made at a premium over the prevailing contract figure and later these consignments increased as the demand increased. About that time deep waterways were completed from Sabine Pass and Port Arthur to Beaumont and from Texas City to Houston by the widening and deepening of Buffalo Bayou and cutting a deep channel through the upper reaches of Galveston Bay.

Refiners were invited to come to the coastal region and investigate the advantages. To this end publicity was again employed. Suffice it to say that now refining plants line the banks of the Houston ship channel from Baytown, near Goose Creek, to Houston, including the Humble Oil & Refining Co., the White Oil Corp., Crown Oil & Refining Co., La Porte Refining Co., Galena-Signal Oil Co. of Texas, Sinclair Oil Refining Co., Keen & Wolfe Co., Houston Terminal Refining Co., a fuel oil plant of the Gulf Co. at Lynchburg, storage and pumping station of the Texas Co. at Clinton and storage station of the Magnolia Petroleum Co., and the refining plant of the Deep Water Refining Co. Sites are owned on the channel by other companies on which they propose to build plants at some future date.

Built by Publicity

The Beaumont-Port Arthur district has also very materially profited through this publicity. In addition to the plants of The Texas Co. and Gulf at Port Arthur and the Magnolia at Beaumont, the Pure Oil Co. has established a loading

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They are made where the making of sturdy dependable Spark Plugs for Gas Engines is the business—not a side line.

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NEW OIL MAP
Nocona District

Covers an area about 15 miles square in north central Montague County, Texas. Shows land and lease owners, towns, railroads, highways, pipe lines and drainage and locations of all wells in and drilling. Scale 2,000 feet 1 inch. Size 42x42 inches. On cloth, $6; paper, $3.50.

HEYDRICK MAPPING CO.
WICHITA FALLS, TEXAS

dock and is building a 10,000-bbl. refinery. The Atlantic Refining Co. has dock facilities now and a site for a proposed refinery. The Sun Oil Co. has added to its facilities and Port Neches has become a center for the manufacture of asphalt and roofing material from Mexican and other heavy gravity crudes. The Pierce Oil Corp. has increased the capacity of its plant at Texas City. The Humble Oil & Refining Co. has a dock and storage facilities there from which tankers are loaded for refineries on the Atlantic Seaboard. The Vacuum Oil Co., one of the pioneer lubricating manufacturers, has docking and storage capacity at Texas City, as has the Swiftsure Petroleum Co. and recently the Marland Oil Refining Co. erected storage tanks and a can plant there, from where it ships to the coast and abroad.

Of course, it is understood that these refining and storage plants and terminals for tankers are not confined exclusively to the use of Gulf Coast crudes. The product of the Mid-Continent, North Texas, Louisiana and Arkansas fields passes through them, but the point is that the publication of an item in The Oil and Gas Journal nine years ago led to an investigation of the value of a crude for specific purposes and eventually resulted in the investment of millions of dollars in refineries and pipe lines and the employment of thousands of men.

At the annual convention of the members of the Western Petroleum Refiners' Association, held at Galveston in April, a proposal was referred to a committee to put on a publicity campaign to educate consumers to the value of Mid-Continent crudes as against those of the East.

HOUGH Products

INTERNATIONAL PETROLEUM EXPOSITION AND CONGRESS TULSA, OKLA. OCT. 8-14

The Charles N. Hough Manufacturing Company of Franklin, Pennsylvania, will display oil well pumping equipment and specialties in Booth No. A-16 at the First Annual International Petroleum Exposition and Congress, Tulsa, Okla., October Eighth to Fourteenth.

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We maintain a geological, land and field departments, all in expert hands

Frequency of Buying Keeps Gasoline in Mind of the Public

Gasoline, as Thomas A. O'Donnell, president of the American Petroleum Institute, declared in an address at Long Beach recently, is a dangerous subject, especially politically. Sugar is another of these dangerous subjects.

"Anything that the American people use a little of every day, and requires repeated purchases," said Mr. O'Donnell, "is the thing they keep thinking of. They will overlook the bigger things and give them one hard punch at a time. Nobody thinks of the automobile from a political standpoint, yet its waste in distribution makes the general selling cost 25 per cent of the entire cost. The cheapest thing about the automobile is the gasoline cost."

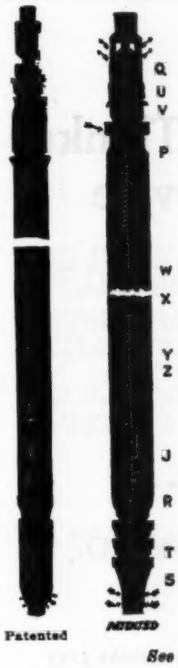
The drinking water sold in bottled form in many cities costs almost as much —more, if icing cost is taken into consideration—than does gasoline, which is produced only after tremendous investments, huge risks, elaborate processes of manufacturing, marketing and distribution.

The gasoline prices wavering ever so slightly may mean the life or death of the oil industry, yet in the aggregate, to the driver, where the usage of the average machine is three gallons per day, a 1-cent change over a whole year, means only just about the price of one pair of shoes.

GRAHAM GASSER DECREASING

No success has been obtained in the efforts to bring under control the Magnolia Petroleum Co.'s wild gasser on the Smith farm, in the southwest of the southwest of the southwest quarter of Section 24-2s-3w, northwest portion of the Graham Field, which has been flowing for several months from sand at 1,815 feet. The pressure has diminished considerably and it is now estimated that the well is making considerably less than 10,000,000 feet with indications the decrease will continue. The latest attempt to harness the prodigal producer consisted of the construction of a concrete block 8 feet square around the 12-inch casing, but the gas blew up around it. G. T. Potts and H. W. Coe, conservation officers with the State Corporation Commission are on the ground, to assist in solving the problem.

Stop Pulling Tubing



The McGREGOR Working Barrel or Plunger Will Reduce Cost of Operating Lease

It is not an experiment—years of actual service have proven it is the best Working Barrel on the market. It is used by a majority of producers, both large and small, throughout the United States and foreign fields.

Especially adapted for wells making sand or with worn-out working barrels or leaky valves. On new wells use McGregor Seat, Part M.

CUP PACKER
Patented April 15, 1919

Exclusive Improvement on Barrel

This new Cup Packer on top prevents barrel from sticking and sand from settling in between tubing and outside of barrel.

Can be applied to any McGregor Working Barrel in oil fields. Can be ordered separately; 30,000 in use. If you wish cup packer, specify same on order.

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Services Available for the Oil and Gas Industry as—

CONSULTING ENGINEERS in all matters pertaining to:
Pipe Line Transportation of Petroleum and Natural Gas.
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Gas Engines and Compressors.

CONSTRUCTING ENGINEERS and CONTRACTORS, specializing in:
Pipe Lines for Gas and Oil.
Compressing and Booster Plants.
Gasoline Recovery Systems, Absorption and Compression.
City and Inter-City Gas Mains.
No Contract too large to complete with satisfaction and dispatch or too far away to handle.

MANUFACTURERS and DISTRIBUTORS of Gas and Oil Specialties, including:
Heat Exchangers.
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Reeves Vertical Gas Engines and Compressors.
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What a Refiner Thinks of Spencer Service

Aug. 29, 1923

"We are in receipt of your letter of Aug. 27th, in which you indicate that you are negotiating with the Spencer Petroleum Co., with a view of contracting your fuel oil requirements for the balance of this year.

The Spencer Petroleum Co. is one of our most valued connections. We have been selling them our fuel since last fall and from our dealings with them we have no hesitancy in recommending the concern in the highest terms. I am sure if you contract your requirements through this company you will find them thoroughly responsible and reliable.

We see no reason why they should not be able to furnish our fuel to supply your requirements, as they have definitely contracted with us for shipment over the end of the year for several times the amount of your requirements. We feel quite sure you will find these people entirely satisfactory in every way."

Since this letter was written, we have sold this company 112 cars of oil.

SPENCER PETROLEUM CO.

All Petroleum Products

Conscientious Oil Marketing
Guided by Years of Experience

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TULSA 1039 Kennedy Bldg. Osage 557

KANSAS CITY 700 Orear-Leslie Bldg. Harrison 6186-87 Long Distance 66

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THIS service consists of drilling and equipping wells and leases. Righting bad holes and fishing for operators and drilling contractors. Developing and managing oil and gas properties. Determining proper casing points and weights of casing to use. Removing water from flooded wells. Renovating old wells.

Practical and confidential scouting. Geological and engineering reports. Surveying and mapping. Surface and sub-surface contouring. Appraising oil and kindred properties. Estimating the present worth and future prospects of stock, bond and note issues of oil and kindred companies.

Supplying commercial leases, also acreage for drilling, located on carefully selected structures in the proven, semi-proven and wildcat fields of Kentucky, Oklahoma and Texas.

T. S. McGRATH

Kenyon Bldg., Louisville, Kentucky

Oil Fields of India, Burma and Assam Described by Consul

By far the greater part of the oil production in Burma has come from the Singu and Yenangyaung Fields, the amount from each being nearly the same, reports Vice Consul Harold Shantz, of Calcutta. Singu, although not a new field, has a large reserve supply, and is said to be capable of a much larger rate of yield than is now being obtained. The Yenangyaung Field is old, but through intensive development and the introduction of various ingenious methods of prolonging the life of wells, is keeping up its yield in a surprising manner.

The future of the Burma Field is in doubt. Many geologists claim that no new large fields are to be found, and that with the waning of the Singu and Yenangyaung production, Burma will recede to a position of minor importance as regards oil production. The gradual failure of the older fields will, to a certain extent, be counteracted by the discovery of new small fields, particularly in more remote regions, possibly including the Arakan Coast region as well as northern Burma.

New fields of moderate importance are being developed in the Chindwin River region in the northern part of Burma. The region is, however, so remote from easy transportation facilities that the production is derived at great expense, and cannot successfully compete with the down-country supply. It must be emphasized that even though no new important discoveries are made in Burma, the present fields continue to play an important part for many years to come, and the production of Burma, although it may now be at the peak, will probably decline very gradually, or possibly even hold steady for a term of years before any decline.

New Possibilities in Assam

The Digboi Field, in upper Assam, has been a small but steady producer for many years, and at present supplies a little less than half of the yield from Assam. One of the particularly valuable products obtained in refining Digboi oil is a paraffin wax with a high melting point. The Badarpur Field, in lower Assam, although a larger producer than Digboi, gives an inferior grade of oil which yields comparatively little petrol and kerosene and finds its best use as fuel oil, much of it being sold locally for use in tea gardens and other factories. Assam has not been thoroughly explored geologically and there are possibilities of new discoveries of importance. A number of companies hold tracts that are in process of being tested.

The belt of Tertiary rock, which is the source of the oil in Assam, extends south along the hill region of eastern Bengal to the Arakan Coast. Although it is recognized that these rocks have possibilities throughout the entire distance, no encouraging results have rewarded efforts at exploration.

Producing Region of the Punjab

The Punjab oil region extends from the Salt Range north to the foothills of the Himalayas and from the longitude of Rawalpindi west to the Indus River. Within that area are many surface indications of oil which have attracted attention from earliest times. A small amount of oil has been produced from natural oil springs each year, but no valuable production has resulted from drilling operations until recently, when the Khaur Field was opened by the Attock Oil Co. This field is about 40 miles southwest of Rawalpindi and is connected with that city by a pipe line through which the oil flows to a refinery having a capacity of a little over 1,000 barrels per day. This refinery was completed in February, 1922, and since then has been handling all the production of the field, which has of late ranged from 16,000 to 26,000 barrels per month. The production of the field during year 1922 was probably about 202,000 barrels.

New wells are being drilled in the

BAKER CASING SHOE CO.

Box 264 - a Huntington Park Sta. LOS ANGELES, CALIF., and Box 239 - COALINGA, CALIF.

MANUFACTURERS AND DEALERS

Oil Well Specialties for Advanced Methods Practical and Dependable

BAKER

Anchor Wall Packers
Baker-Casing Shoes
Bridge Builders
Cement Retainers
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Clean-Out Bailers
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Die Nipples: Water
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Pitman Ends
Plain Casing Shoes
Regular Hook Wall Packers
Release Hook Wall Packers
Rotary Bits: Baker Type
Rotary Hole Guides
Rotary Shoes
Rotary Tool Joints
Rotary Wall Hooks
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All Supply Houses or Direct

Tyden Seal for Protection

The Tyden Self Locking Seal insures absolute seal protection for storage tanks and pipe lines.

Placed on valves at tanks and pipe lines, it embodies, among others, following features:

Cannot be removed without being destroyed.

Each seal bears company name and consecutive number.

Requires no press or sealing iron.

Each seal is complete self locking lock.

Adopted by Treasury Department of the United States Government for sealing bonded freight in connection with customs.

International Seal & Lock Co.
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Chicago Office: 617 Railway Exchange

Quimby Screw Pumps

For oil, hot, cold, thin or thick at high or low pressure. 2 to 4,000 G. P. M. High efficiency. Great durability. Valveless, pulseless, noiseless. High speed for motor or turbine. Built since 1904.

WILLIAM E. QUIMBY, Inc.
Newark, N. J.

De Laval Crude Oil Purifiers

—purify cut production more economically.
—stop loss of oil in b. s.
—reduce evaporation losses.
—soon pay for themselves with the above savings.

Mail Coupon for Detail

The De Laval Separator Co.
165 Broadway New York

We would like to know how we can treat our production to stop the accumulation of b. s. and how we can, perhaps, reclaim enough crude from our b. s. pond to pay for installing De Laval Crude Oil Purifiers.

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THE PUMP THAT WILL HELP YOU SELL

Gilbert & Barker pumps are something more than efficient mechanical dispensers of gasoline. By their use markets can be broadened, distribution increased, sales stimulated and your products indelibly imprinted on the minds of motorists. And you can do this more economically with these pumps than by any other means.

Get full information on the equipment by writing for Bulletin 37

GILBERT AND BARKER MANUFACTURING COMPANY

Khaur Field and also at other points in the Punjab, and the chances are good for other discoveries more important than any made so far. The same belt of rocks extends westward into Northwestern Frontier Province and thence southward along the Beluchistan foothills, all the way to Karachi. Explorations carried on at various points in this belt have not been encouraging, but the work has been for the most part localized at a few points of interest rather than thorough and extensive.

Efforts to Discover New Fields

Both in India and Burma keen rivalry is evident in the effort of the various oil companies to acquire holdings. In Burma alone there are at least 18 companies making a more or less serious effort to discover and develop new oil lands. Of these only a few concerns have the capital and technical staff necessary for successful operations. Although all of these are British, or at least organized and controlled by British subjects, the rivalry is intense. The same is true in the oil regions of India, although the number of companies actively engaged there is comparatively few.

Railroad Not at War With Truck Traffic, Says One Executive

BOSTON, Mass., Oct. 1.—Vice President Gerrit Fort of Boston & Maine Railroad, before the Motor and Accessory Manufacturers' Association, declared "The railroads are not engaged in a competitive war with the motor.

"There is no doubt that for every short haulage of freight the motor is superior to the steam railroad. The terminal cost of railroad service is the most important item, and when the haul is short the revenue is eaten up by these terminal costs.

"I think there is no doubt that within a short radius of large cities, not to exceed 20 miles, the railroad would be financially better off if it could be relieved entirely of the handling of less than carload traffic, if at the same time it could get rid of its overhead expense in the way of station maintenance. But if the railroad must keep its stations running to take care of only a part of the traffic, it naturally wants that part to be as large as possible.

"On the other hand there is no question in my mind that when truck operators figure their costs in a more dependable manner than is being done today it will be found that the railroad can more economically move a great deal of traffic now going over the highways. I am reasonably certain that for distances of 40 miles or over, except in certain specialized lines of traffic such as household goods, the trucks would be better off in the long run if they ceased all effort to compete with the railroads.

"I believe that the motor carrier will ultimately find its most important place in our national transportation scheme as an aid and supplement to, rather than as a competitor of railroads.

"From the standpoint of the public, regulation of common carrier motors would seem to be essential, for the public must finally 'pay the freight.' The railroads are public servants and have performed and must continue to perform a substantial amount of service which is unprofitable, chiefly in territory where the performance of highway transportation would also be unprofitable."

MOVE PRODUCTION OFFICES

SHREVEPORT, La., Oct. 1.—Offices of the production department of the Ohio Oil Co. will be removed from Haynesville and merged with the land department of that company which has offices in the Commercial Bank Building in Shreveport. The combined offices will be located in a suite of 12 rooms located in the new Gidden-Lane Building soon to be ready for occupancy.

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GULF PORTS SHIPMENTS OF CRUDE AND REFINED PRODUCTS IN AUGUST

HOUSTON, Tex., Sept. 29.—Shipments by water of refinery products and crude from Gulf Ports during the month of August totaled 10,244,324 bbls., a decrease of 836,298 bbls. from the July movement. Refinery products fell off 622,884 bbls. and crude 213,414 bbls.

The shipments from the big plants in the Beaumont-Port Arthur district totaled 5,887,201 bbls. of the gross refined and crude. From the Texas City-Houston ship channel district a total of 1,358,402 bbls. was loaded and from the South Louisiana ports, 2,118,721 bbls.

The consignments of The Texas Co. increased 750,364 bbls. over the July record, while those of the Gulf Refining Co. declined 345,352 bbls. The Magnolia Petroleum Co.'s shipments decreased 545,960 bbls. compared with July. The crude shipments of the Humble Oil & Refining Co. from Texas City are off 476,252 bbls. from those of the previous month, although its consignments of Gulf Coast crude increased from 68,545 bbls. during July to 135,218 bbls. in August. The consignments of the Standard Oil Co. of Louisiana dropped off 89,029 bbls. from July. These are the largest shippers.

Exports

Export consignments total 1,918,399 bbls. during the month under review, made up of 1,866,641 bbls. of refinery products and 51,758 bbls. of crude. This represents a decrease of 30,965 bbls. in refinery products. No crude shipments made to foreign ports during July.

The following table gives the shipments by each company in detail.

FROM PORT ARTHUR

By The Texas Co.
Refined

Destination—	Bbls.
Coastwise	1,030,422
Export	514,847
Total	1,545,269

Crude

Coastwise	474,964
Export	11,758
Total	486,722

By the Gulf Refining Co.
Refined

Coastwise	1,830,581
Export	127,311
Total	1,957,892

Crude

Coastwise	60,884

FROM BEAUMONT

By Magnolia Petroleum Co.
Refined

Coastwise	610,616

35,843 bbls. fuel oil included.

Crude

Coastwise	263,178

FROM SABINE

By the Sun Oil Co.
Crude

Coastwise	401,640

FROM PORT ARTHUR-SABINE

By Atlantic Oil Producing Co. (Atlantic Refining Co.)
Crude

Coastwise	389,000

Haynesville and Mexia.

FROM SMITHS BLUFF
By Pure Oil Co.
Crude

Coastwise	152,000

Mexia and Powell.

FROM TEXAS CITY
By Humble Oil & Refining Co.
Crude

Coastwise	908,777

181,135 bbls. Ranger crude.
592,424 bbls. Mexia crude.
135,218 bbls. West Columbia crude.

FROM BAYTOWN (Refinery)
By Humble Oil & Refining Co.
Refined

Coastwise	574,625

Crude

Coastwise	446,000

FROM TEXAS CITY
By Vacuum Oil Co.
Crude

Coastwise	137,000

By Mariand Refining Co.
Refined

Export	35,000

Crude

Export	40,000

FROM HOUSTON
By Galena-Signal Oil Co. of Texas
Refined

Coastwise	87,000

By Deepwater Refining Co.
Refined

Coastwise	30,000

FROM BATON ROUGE
By Standard Oil Co. of Louisiana
Refined

Coastwise	595,442
Export	954,483
Total	1,549,925

Crude

Coastwise	333,796

FROM WESTWEGO (La.)
By Union Petroleum Co.
Refined

Export	235,000

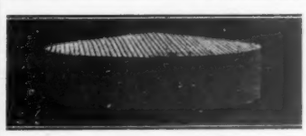
SUMMARY

Shipments of Refined and Crude from Gulf Ports During Month of August, 1923

Company and Port—	Refined	Crude	Total
The Texas Co., Port Arthur	1,545,269	486,722	2,031,991
Gulf Refining, Port Arthur	1,957,892	60,884	2,018,776
Magnolia Pet., Beaumont	610,616	263,177	873,794
The Sun Oil Co., Sabine	.....	401,640	401,640
Atlantic O. P., Port Arthur-Sabine	.....	389,000	389,000
Pure P. L. Co., Smith's Bluff	.....	152 000	152,000
Humble O. & R., Texas City	.....	908,777	908,777
Humble O. & R., Baytown	574,625	446,000	1,020,625
Vacuum Oil Co., Texas City	.....	137,000	137,000
Mariand Refining Co., Texas City	35,000	40,000	75,000
Galena-Signal, Houston	87,000	.....	87,000
Deepwater Ref., Houston	30,000	.....	30,000
Standard Oil of Louisiana, Baton Rouge	1,549,925	333,796	1,883,721
Union Pet., Westwego, La.	235,000	.....	235,000
Total for August	6,625,327	3,618,997	10,244,324
Total for July	7,248,211	3,832.411	11,080,622
Difference	622,884	213,414	836,298

Exports

Company and Port—	Refined	Crude	Total
The Texas Co., Port Arthur	514,847	11,758	526,605
Gulf Refining, Port Arthur	127,311	.....	127,311
Mariand Refining, Texas City	35,000	40,000	75,000
Standard of Louisiana, Baton Rouge	954,483	.....	954,483
Union Petroleum, Westwego	235,000	.....	235,000
Total for August	1,866,641	51,758	1,918,399
Total for July	1,897,606	.....	1,897,606
Difference	30,965	51,758	20,793
Totals for June	1,366,343	78,981	1,445 324
Totals for May	1,356,059	.....	1,356,959
Totals for April	1,873,544	.....	1,873,544
Totals for March	1,946,674	.....	1,946,674
Totals for February	1,613,195	64,383	1 677,577
Totals for January	1,510,322	.....	1,510,322



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SALE OF NAVAJO TRIBAL OIL AND GAS LEASES.

On October 15, 1923, at 10 a. m., there will be offered for sale at Santa Fe, New Mexico, exploratory oil and gas mining leases on four structures and leases on eighteen tracts on the Bogback structure for a cash bonus in addition to royalties on production. Full information may be obtained from H. J. Hagerman, Commissioner to the Navajo Tribe, Santa Fe, New Mexico, or from the Commissioner of Indian Affairs, Washington, D. C.

NATURAL GAS IN FRANCE?

Drilling for petroleum has been carried on at Vaux, a village at the entrance of a valley of the same name on the railway Amberieu-Montalieu, east of Lyons, the boreholes being located about four kilometers from the railway station towards the valley. One of the boreholes, at 223 meters, encountered natural gas, which produced 100,000 cubic meters (say 3,500,000 cubic feet) in 24 hours. This was with difficulty pinched in to 5,000 cubic meters at a pressure of over 30 lbs. per sq. inch. The analysis gives 80 per cent methane; 6 per cent hydrogen, besides other gases. A scheme is now proposed to light the neighboring town of Amberieu from this source.

Oil Burning Wins; Internal Combustion Marine Engines Next

The official announcement that the mail steamers of the P. and O. and Orient lines which sail between London and Australia are to be converted from coal to oil fuel carries one stage further the great evolution which was predicted considerably before the war, says the London Oil News. The universal upheaval in some ways postponed that evolution, but in other directions was serviceable as showing what steamships could accomplish on the liquid fuel as compared with the solid. The new P. and O. ships "Mongolia" and "Moldavia" have already furnished valuable data as oil burners; and the change has been pro-

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nounced successful. The largest of the Orient fleet, the "Ormonde," was more recently converted, and there was recently announced the temporary retirement of the "Homeric," the last of the big seven which form the crack Atlantic Fleet of today, for the purpose of being converted from coal to oil. The change of conviction in the minds of managements is complete; and this is rapidly being translated into performance as one after another of the great flyers are changed over to the better fuel.

Internal Combustion Next

Looking a little further ahead, the London publication continues, we may venture to prophesy a time in the near future when, first of all, there will not be a superabundance of crude oil to meet the growing needs of the world, and when, secondly, the use of crude oil in its natural state, or even simply topped, will be regarded as an economic sin, as indeed it is. In that epoch topped oil, or fuel oil as we know it, will be looked upon as too valuable to burn for making steam, and will be distilled into as many fractions as circumstances render desirable. (The new refining methods are quite competent to achieve this.) Certain fractions of this oil will then be utilized as fuel for internal combustion engines, whether in a liquid state or after being converted into gas before introduction into the cylinder. Which will be the more favored method we cannot at present state. The large vessel of the future will be propelled by such fuel through the medium of internal combustion engines of an improved Diesel or other type. So that we shall see the oil-fired steamer of today give place to the internal-combustion engined vessel of as large dimensions as any vessel afloat today. The change in the method of using oil will be great; but in the new epoch of marine propulsion, as in the present one, oil will stand supreme.

Diesel Method Gains

In the course of a report on the position of the shipbuilding industry, a special correspondent of the London Daily Telegraph writes: Interest is centered on the conversions, both real and contemplated, of vessels at present fitted with reciprocating engines to the Diesel method of propulsion. Transformations of this character have taken place on a fair scale in this country, but it is certainly not without significance that the idea has caught on chiefly in America. The latest proposal in the States is that 10 or 15 of the Shipping Board's better type of steamer, of approximately 8,500 tons carrying capacity, should be fitted with Diesel engines in lieu of their present propelling power. While, however, it is the growing opinion that the Diesel ship must sooner or later come completely into service, there are many shrewd judges who consider it a highly speculative matter to carry through conversions such as those now contemplated, the reason for their doubts being that the hulls were not, of course, specially designed for Diesels. However that may be, it is a fact that, when the American Marine Congress is held in November, a committee, under the presidency of Rear-Admiral Benson, at one time prominently identified with the Shipping Board, will report on the best means of developing the Diesel engine in the United States. Whether, in the light of what happens at this Congress, an extensive conversion program will be outlined, of course remains to be seen, but it is clear that the whole subject is being analyzed in order to ascertain what advantages the conversion holds.

OIL IN ITALY

The Italian Government in the last five years has spent 10,000,000 lire prospecting for oil in Ripi Valley, in the Rome district. The working of deposits will be handed over to private enterprise. So far Government prospectors have extracted 400,000 litres of oil.

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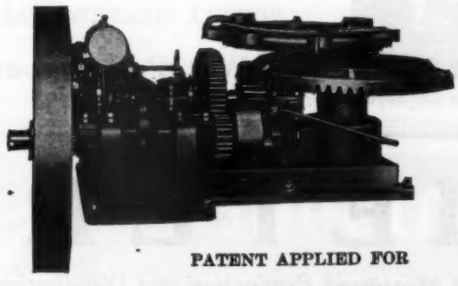
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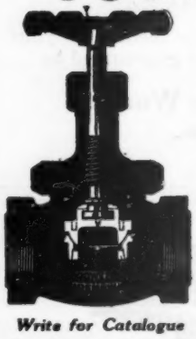
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MENACE OF MEXICO MAY DEMAND TARIFF

(Continued from Page 152)

were listened to by a subcommittee. It was rumored about at the time that the committee on Ways and Means of the House of Representatives would give a majority of one for a tariff on petroleum but when it came to vote fear of losing votes at home caused this majority of one to disappear and the only recourse left was a proposed amendment without the sanction of the committee, this being voted down in the House of Representatives by 225 to 91.

Deemed Unpopular

The discouraged small and poorly organized advocates of a tariff on petroleum then went to the Senate where they were met by a flood of petitions from associations of automobile owners and farmers that prevented any action. Senator Penrose, representing an oil State, realizing that petroleum had a right to protection, in his own brusque way, waved the matter aside as impossible because of the stigma that would be brought against it as Standard Oil legislation. Yet it was testified to at about that time in the hearings conducted by the LaFollette gasoline committee by R. L. Welch, secretary of the American Petroleum Institute, that the crude oil production was running at about 1,500,000 bbls. per day, of which the so-called Standard companies produced about 300,000 bbls. or about 20 per cent of the production at that time. Testimoney was also given to the effect that the Standard company refineries, including all those commonly designated as Standard Oil, were producing less than 38 per cent of the refined products. So it is seen that Standard Oil, with its history of accumulated wealth and with its unpopularity in the political arena, had sufficient dread for the politicans to hold them from any action that will give relief to the great oil industry both in the producing field and in the refinery.

It is a very well known fact that the average small producer has been a very inefficient man in the protection of his rights in Congress. Unless there is an awakening within the industry and a demand for treatment similar to that accorded other branches of business there never will be any permanent protection for the small oil producer who will be forced to see his product compete with petroleum from Mexico, the land of big wells and peon labor where only a small fraction of the potential oil field has yet had its surface scratched.

DEATH OF WILLIAM G. RYAN

William G. Ryan, aged 47 years, for many years prominent in the oil and gas business in fields of Pennsylvania, Indiana and Ontario, Canada, died recently at his home in Detroit, after a brief illness. Mr. Ryan was born near Belleville, Ont., but was reared at Bradford, Pa. At the time of the Tilbury boom, Mr. Ryan went to Ontario and was associated with R. I. Pattinson of Chatham, Ont., in the organization of the Northern Pipe Line Co., Medina Natural Gas Co., the Central Pipe Line Co., and other production and pipe line enterprises. He leaves his mother and one sister who reside at Bradford.

PERMITS IN DUTCH EAST INDIES

The Batavia Petroleum Co., subsidiary of the Royal Dutch-Shell, was granted a number of petroleum prospecting permits in the Soerbaya consular district during May and June, according to official announcement of the Netherlands Indian Government. Ten of these grants cover territories in Saleier, a small island south of the Celebes. Two other permits were for areas in Pasi and Pasi-Tanette, other small islands in the immediate neighborhood. This company likewise received seven grants near Boeloekoemba, Bonthian District, South Celebes. The only other permit for petroleum prospecting was granted to P. Bosch, independent, for territory near Kraksaan, Pasoeroean Residency, Island of Java.

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SANTA FE SPRINGS, CALIF., DECLINE CURVES

(Continued from Page 150)

Between the Foix zone and the Bell zone is a stratum of sticky brown shale from 30 to 40 feet thick. This shale is usually considered a part of the Bell zone. The productive formations of this zone are approximately 220 feet in thickness, composed of oil-bearing sands and sandy shales. Beneath these is a more or less distinctive shale bed, sometimes logged as sandy shale, from 40 to 50 feet thick.

Several wells have been drilled through all of these formations of the Bell zone into the sticky shale stratum marking the top of the Meyer zone and have shown water. Other wells not drilled quite through the horizon were clean. This condition led to the conclusion that water exists between the Bell zone and the Meyer zone beneath. The source of this water may be in the sandy portion of the lower 40 to 50 feet of the Bell zone, or in the thin streaks of sand logged in the top 30 feet of shale in the Meyer zone.

The preponderance of evidence seemed to show that there is an intermediate water over the entire field between the two zones.

Meyer Zone

The top of the productive formations in the Meyer zone is approximately 300 to 350 feet below the top of the Bell zone, and from 480 to 530 feet below the top of the Foix zone. Its areal extent in all directions has not been determined.

The oil produced from the Meyer zone is high gravity, ranging from 34 degrees Baume in wells on the edge of the structure to as high as 35.6 degrees Baume on the top of the structure. Most of the oil being produced at present from the zone is 35 (plus) Baume and has a gasoline content of about 35 per cent.

The Meyer zone has a thickness of 830 feet on top of the structure, measuring from the bottom of the Bell zone to the bottom of the deepest hole stratigraphically so far drilled in the top area. There are three distinct divisions to the Meyer zone—the upper, the middle, and the lower portions, separated from each other by formations in which brown shale predominates, sometimes reported as sticky brown shale.

The first 30 feet is brown shale with sand streaks, possibly containing some water. This is underlaid by a distinct sticky brown shale rangnig in thickness from 40 to 60 feet, which is just above the first oil horizon in the Meyer zone. This is the formation in which the water string should be cemented in wells drilling to produce from this zone.

Below this shale bed the formation changes to sandy shale, with streaks of sand, carrying oil and gas. There is from 60 to 80 feet of this formation. Wells drilled only into it have produced around 2,000 bbls. daily of 35 degrees Baume oil. Then comes about 50 to 60 feet of sticky brown shale with no oil content. These formations, constituting an aggregate thickness of about 200 to 225 feet, make up the top portion of the Meyer zone.

The middle portion of the zone is about 280 feet thick, consisting of rich oil sands and sandy shales containing oil. This is the prolific oil horizon from which most of the present Meyer zone wells are producing.

Under this is about 100 feet of brown shale, the lower 40 feet of which contains streaks of oil sand.

The next or lower portion of the zone has been drilled into about 200 feet and is also apparently a very prolific oil producer. Very few wells have been drilled into about 200 feet and is also apparently a very prolific oil producer. Very few wells have been drilled into it, but these have come in with a much greater production than those finished in the middle portion.

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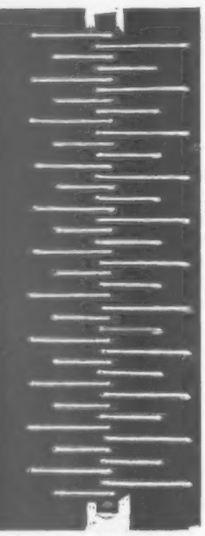

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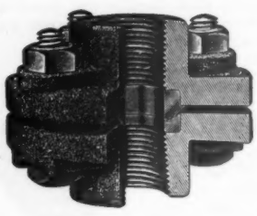

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Fish Source of Oil Says U. P. Professor; Supply Inexhaustible

PHILADELPHIA, Oct. 1.—Prof. J. M. McFarlane of the University of Pennsylvania believes the supply of petroleum is inexhaustible and holds that fish are the sole source of supply.

A statement given out by the university said that Dr. McFarlane's study of fish and their relation to petroleum had extended over nearly half a century, beginning when he was an undergraduate and graduate student at the University of Edinburgh, where he won prizes for researches in this and similar fields.

According to the statement, Doctor McFarlane, in reaching the conclusion that fish constitute the sole source of petroleum, emphasized these points:

"That fishes constitute the sole source of petroleum.

"That a knowledge of this fact will enable man to locate, with almost scientific accuracy, new oil deposits.

"That there is no danger of the exhaustion of the world's oil supply.

"That the recognition of scientific principles regarding the origin and location of fish deposit beds will result in the cheaper production of oil and hasten the development of its commercial value for motive power and heating purposes."

Half Century's Study

These conclusions are based, Doctor McFarlane claims, on a study of fishes and their relation to petroleum, which he began when an undergraduate and graduate student at the University of Edinburgh, where he won numerous prizes for researches in this and similar fields.

After arriving in this country he continued his researches which culminated in the discoveries now announced by him.

"Petroleum is destined to be the new king of the industrial world," said Doctor McFarlane in speaking of his conclusions today, "just as we once declared that cotton was king.

"Extensive zones of fish remains that form fish beds and like strata are observed across areas of the northern hemisphere," he continued. "These remains are coeval with, and as a rule are in the same rocks with rich bituminous oil products. Such rocks or strata might be termed producer rocks. By subsequent earth movements and resulting oil migrations this oil is often found in porus standstone and like rocks. It is certain that vegetable remains did not enter into the production of crude petroleum of kerosene, which is wholly of animal origin."

Colleagues Endorse Views

According to University of Pennsylvania officials, scientists who have seen the result of Doctor McFarlane's researches, declare that he eliminates all doubt as to fishes being the correct source of petroleum.

Tracing the origin of petroleum deposits of earthquakes and similar volcanic disturbances which, in early times, killed immense quantities of fishes, changed the surface of the earth and the boundaries of the oceans and fresh water bodies, Doctor McFarlane further declares that new supplies can easily be found if proper research is made.

"Every new disturbance like the recent Japanese earthquake, particularly in regions adjoining the sea, result in the developments of new deposits for the production of oil," he said.

Doctor McFarlane's conclusion is that our supply of oil is practically unlimited and that it is a practical substitute for coal for heating purposes. "It will cost less and be free from dust and ashes," he said. "The perfection of this has been unaccountably slow, but it will come in due time."

Fish Fauna Oil Sign

Concerning the future of the oil supply of the world, Doctor McFarlane said:

"There is every promise of great and

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sufficient oil supply for the future, especially if present known oil stratas are penetrated to increasing depth, but in continuing anticlinal relations. Increasing utilization also of oil shale rock will furnish practically exhaustless supplies for many countries where these are found. Its extraction at reasonable cost should be one of the problems that inventive science should solve.

"Instead of trusting to luck, exact scientific information should be utilized for the location of oil deposits. A skilled scientific staff of geologists and palaeontologists should have wide and accurate knowledge of fossil fishes and even fragments of them, so that when definite areas are investigated it may be possible to locate and follow the important oil-bearing zones along with and by the aid of their typical fish fauna."

The first scientific explanation of how fish oil set free by earthquakes and volcanic movements becomes precipitated as a constituent of oil shale or oil rock, is credited by Doctor McFarlane to a Philadelphia scientist and member of the University of Pennsylvania faculty.

"To this question," said Doctor McFarlane, Joseph Leidy first made answer. Fully 40 years ago he pointed out that the escaping oil from the Philadelphia gas works passed into the Schuylkill gradually became caught up between mud particles and then the whole was precipitated as an oily clay film or oil shale layer. This was later confirmed by Stuart, the Anglo-Indian geologist, in his experiments with Burmese petroleum."

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In the office of Standard Oil Co. of New York, on the thirteenth floor of 26 Broadway, says the Wall Street Journal, is the framed remnant of a bill, one of the exhibits in the suit which resulted in final dissolution of the Standard Oil combination in 1912. Dater January 5, 1865, the bill invoices the sale to John A. Jones by McArthur & Mallory, wholesale grocers of Cincinnati, of 40 gallons of coal oil at 90 cents a gallon, or $36 for the lot. This coal oil, nothing more or less than what we now call kerosene, sells for about 16 cents a gallon in New York today.

What a contrast between conditions in the industry then and now! In 1859 Colonel E. L. Drake drilled his successful well in the Oil Creek region of Pennsylvania. Kerosene, or coal oil, wanted for illuminating purposes, became the product most desired from crude petroleum, the more volatile constituents such as gasoline being considered of little or no value and therefore wasted. Now, 60 years after, kerosene is reduced to secondary importance beside gasoline, the latter commanding a ready market at prices which improved processes in the refining of crude oil have rendered well within the consumer's ability to afford.

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A certain bailing well in a Rumanian field was burned down three times in as many weeks. An examination showed that brakes and electric motor were in good order and workmen were, at any rate on the latter two occasions, too intimidated to smoke. The men, on cross-examination, insisted that "the fire came out of the hole," which was at the time believed to be impossible. The well was being bailed by means of a Canadian drilling rig, and the weather was at the time very dry. Experts came to the conclusion that the fire was started by electrostatic sparks.

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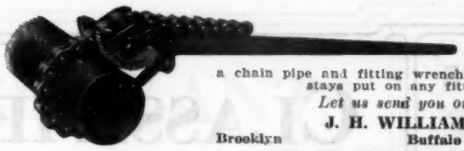
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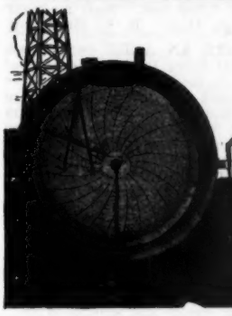
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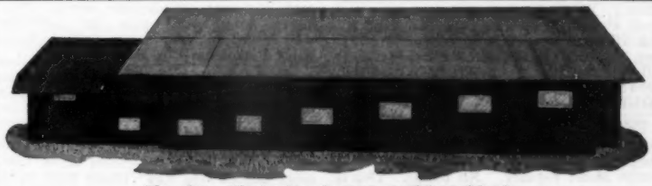
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WANTED—A producing oil property, only partially drilled up, or a piece of proven oil land, in exchange for a good paying established business in California that requires very little attention, also one of the most beautiful homes located in the most delightful part of California. Value of business and home about one million dollars. Send full particulars with value of oil property, etc., to Harry Bickell, Capitola, Calif.

WANT CONTRACTS for seven strings heavy cable tools. P. O. Box 416, Wagoner, Okla.

WANTED—Labor contract to drill wells to 800 feet. Have good machine and several years' experience in oil field work. Can start 10-inch hole. A. L. Needy, Butler, Okla.

FOR SALE—PETS

FOR SALE—Trained pointers and puppies. I can train a few more this season. W. W. Escue, breeder and trainer, Brownsville, Tenn., Route 3.

FOR SALE—German shepherd police bitches, bred to good sires; also a few puppies priced to sell. Carl Farris Agency, Mo.

HELP WANTED

WANTED—A man experienced in heat treating Rotary tool joints. Must have had experience with high grade manufacturer. Write Box 220, The Oil and Gas Journal, Tulsa, Okla.

WANTED—A man who can qualify to meet big, successful business men who are interested in gas and oil well supplies. Address, H. L. Cartzdafner, Coffeyville, Kansas.

STOREHOUSE OF INFORMATION

The Oil and Gas Journal contains statistics and unlimited information that is most valuable to the oil and gas man. Calls for back numbers are so numerous we are unable at all times to supply the demand—in fact, we can furnish very few back numbers. The issues missing from our files may be the ones you want. To make it possible for you, at all times, to refer to special articles or other information you desire, we have secured binders specially designed and durable and attractive in appearance that hold 26 numbers, or six months' issues. They are for sale at actual cost to us.

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SALESMAN and organizer will raise $10 000 to $50,000 for business venture or venture that promises a worth-while future. Address P. O. Box 457, Chicago.

CAPITAL—Want party to join me with $30,000 in purchase of long established profitable manufacturing business. A-1 security. Profits will more than double the investment within year. Quick action necessary. Address Box 210, care The Oil and Gas Journal, Tulsa, Okla.

FREE ON REQUEST—Map of Allen County, Kentucky, showing pools. Greatest shallow oil field in the world. Production on pipe line and leases with wells equipped and unequipped, near pipe line. Splendid opportunity for oil companies or syndicating. Brokers and promoters protected. Lock Box 4, Scottsville, Ky.

THE OHIO PIPE LINE CONSTRUCTION CO. is in a position to save you money on contracts for ditching, laying and taking up lines, gas or oil in any location. All or any part of pipe line jobs; 16 years' experience, and the latest equipment. Box 242, Phone Main 1443, Canton, Ohio.

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COMMON LAW COMPANIES—Organize under Declaration of Trust; many advantages; legal everywhere; managed by trustees; limited liability. No State organization fees, reports or franchise tax. Meet or do business anywhere. Better than a corporation or partnership. Booklet free. Modern Organization Co., 304 South Broadway, Los Angeles, Calif.

I HAVE wildcat acreage, highly recommended by competent geologist, in vicinity of wells being drilled. Wells spudded in and locations blocked for drilling. I will sell for $2 per acre and up. I might furnish a 10,000-acre block for a drilling contract. W. R. German, Canadian, Texas.

WANTED—Party with capital to finance the drilling of an oil well in Arkansas. Good geology. T. L. Cook, Box 307, Camden, Ark.

BUSINESS OPPORTUNITY

WANTED, IDEAS—An established manufacturer with ample capital and modern machine shop will manufacture and market oil field supplies or specialties of merit on royalty basis. If you have an idea to sell, write Box No. 180, care The Oil and Gas Journal, Tulsa, Okla.

CAPITAL furnished, in large sums only, for expansion purposes. Record of earnings required. Write Box 201, The Oil and Gas Journal, Tulsa, Okla.

WILL pay cash for good royalty, any size. Write Box 202, The Oil and Gas Journal, Tulsa, Okla.

Inquiries about leases, tools, machinery, acreage, production and royalties are constantly coming to the Classified Section. The good advertisements on the Classified Pages make it easy for us to answer these inquiries.

CONSOLIDATION—Consolidation is almost an economic demand. Production owners, there is a reason why you should consider consolidation of your interests with those of other similar companies. Equitable consolidation, free from promotion schemes, is not difficult when handled by disinterested and qualified parties.

We handle all kinds of consolidations. No advances asked; highly qualified; references given; correspondence will bring full detail before you. The Western United Syndicate, Erie, Penn.

MONEY raised for legitimate companies. Write, Kuryer, Box 533, Buffalo, N. Y.

Will sell my interest in producing company which also has small refinery which at present is shut down but could be started up within 48 hours; several hundred wells within a radius of 8 miles of refinery. This is one of the few companies that is absolutely free from debt and has a wonderful possibility. The officer who wishes to sell his interest is not a practical oil or refinery man and such a man is needed in the company. This is a great opportunity for man to come in and make the company one of the biggest in this section. Write Box 121, The Oil and Gas Journal, Tulsa, Oklahoma.

LAST OPPORTUNITY to secure Elko Oil Development & Improvement Co. stock at 10c per share. Well 2,375 feet deep cased to this depth nearing production; high oil and gas content, paraffine base 45 gravity. Address communications to the company, Elko, Nevada.

RARE OPPORTUNITY
PRODUCTION ALREADY ACQUIRED

For sale at a bargain, a one-twelfth interest in the Harmony Oil & Gas Trust. This trust holds a one-half interest in a large lease in the Tidioute Pool. Two wells on this lease with an open flow of approximately 13,000,000 cubic feet of gas daily. Rock pressure 500 pounds. Gas wells in Queen sand, two miles away still big producers after 40 years. If only one-fourth of the open flow were sold at price offered for the gas this one-twelfth interest should net the owner between $9,000 and $10,000 a year. Contract for sale of gas will probably be closed within the near future. Room for many more wells on what appears proven territory. J. C. Sibley, Jr., 15 Hancock bldg., Franklin, Pa. Bell phone 227; Pet. 'phone 421-X.

WANTED—Associates in forming a development syndicate. M. L. Wotton, 709 N. L. St., Tacoma, Wash.

CAPITAL supplied, manufacturing, oil and other legitimate business, through sale of securities on reasonable commission. House established 30 years. Wiers, 115 Broadway, New York.

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QUALITY PRINTING—1,000 letterheads, envelopes, statements or cards, $3; 200 notesheets and 100 envelopes with name and address, $1. Samples free. Howlett's, Paris, Ill.

POSITION WANTED

The Journal has a wide circulation, going to all the oil fields, refineries, pipe line stations, gasoline plants, supply houses and business offices. It thoroughly covers the industry.

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SUPERINTENDENT of tools and production and expert fisherman, desires connection with reliable oil company; years' of practical experience. Can go anywhere. Box 110, The Oil and Gas Journal, Tulsa, Okla.

REFINING MANAGER and superintendent wants connection with reliable company; ten years' experience full lubricating refinery, 37 years old, married. Address Box 208, The Oil and Gas Journal, Tulsa, Okla.

Chief Geologist of large Mid-Continent oil company will consider new connection with private capital or organization on basis of salary and interest. Has several structures in Mid-Continent and elsewhere and in touch with many available producing properties. Can build large producing oil company with properties in touch with if reasonable capital is available. Inquiries from responsible parties invited. Write Box 209, The Oil and Gas Journal, Tulsa, Okla.

MANAGER and superintendent open for a connection with a good organization now in or anticipating entering the oil business. Am thoroughly competent to take full charge of both field and office, including drilling; either cable or rotary. Exceptional references furnished. Address Box 212, The Oil and Gas Journal, Tulsa, Okla.

POSITION WANTED by married man 36 years of age at present employed. I have been in the Production Dept. out on a lease for the last four years as material supply man, warehouse man and timekeeper. Am well acquainted with everything in our department. Have been with same company four years. Can furnish references. Wish to change on account of wife's health. Will not consider anything in Texas. Address P. O. Box 78, Wichita Falls, Texas.

ELECTRIC WELDING engineer desires to conect with reliable refining or producing company. Eleven years experience; will give best of references. Write J. E. McLausson, 3120 E. Fifth St., Tulsa, Okla.

REFINERY SUPERINTENDENT—desires connection with some responsible concern, has had 30 years' experience in refining, pipe line and marketing; thoroughly familiar with lub plants; will go anywhere. Address Refiner, care The Oil and Gas Journal.

LAND MAN—Experienced in leasing and blocking acreage, close trade, also thoroughly trained as general oil office man, including details and executive work, wants connection with reliable company in land department or represent company as agent at branch office; now employed; prefer Texas. Box 123, The Oil and Gas Journal, Tulsa, Okla.

DRILLING IN YUGOSLAVIA

At present there are four companies carrying on oil drilling operations in the Zagreb district of Yugoslavia. Bitumen D. D., a subsidiary of the Anglo-Persian Oil Co., has been drilling at Resetari, Slavonia, and at Marinovac, Croatia, but without success. The operations at Resetari have been abandoned, and drilling will be continued only at Marinovac. A depth of more than 1,000 meters has been reached. Zelnica D. D., a private enterprise, is producing a small quantity of oil at Zelnica, Slavonia, the output amounting to 7 or 8 barrels per day from a depth of 700 meters. There is said to be no immediate prospects of an increase in production. Bjenik D. D., which is partially State owned, has been drilling at Bujavic, Slavonia, but without success and operations have been temporarily abandoned. The Anglo-Saxon Oil Co., a subsidiary of the Royal Dutch-Shell, drilling at Sedlarica, Slavonia, struck oil sand at a depth of 770 meters early in July, but the well soon filled with water. Concrete was poured in and drilling has been resumed through the concrete.

PAN-AMERICAN PETROLEUM WINS

Pan-American Petroleum & Transport Co., through one of its subsidiaries operating in Mexico, has won its suit in the supreme court of Mexico against the Pierce Oil Corp., involving acreage in San Miguel.

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS PIPE LINE STATEMENT FOR AUGUST

Runs		
*Prairie Pipe Line Co.	2,480,000	80,000
Gulf Pipe Line Co.	1,490 850	48,092
Texas Pipe Line Co. of Okla.	581,780	18,767
Magnolia Pet. Co.	862,672	27,828
Empire Pipe Line Co.	781,817	25,220
Cosden Pipe Line Co.	513,826	16,575
Sinclair Pipe Line Co.	1,024,720	33,056
*Other lines	7,750,000	250,000
Total August	15,485,665	499,538
Total July	16,955 596	546,954
Difference	1,469,931	47,416
Shipments		
†Prairie Pipe Line Co.	3,536,928	114,094
Gulf Pipe Line Co.	1,201,730	38,765
Texas Pipe Line Co. of Okla.	376,611	12,149
Magnolia Petroleum Co.	727,332	23,462
Empire Pipe Line Co.	805,467	25,982
Cosden Pipe Line Co.	278,376	8,980
†Sinclair Pipe Line Co.	1,074,154	34,650
*Other lines	7,444,000	240,000
Total August	15,444.598	498,082
Total July	17,057 623	549,746
Difference	1,613,025	51,664
Stocks		
*Prairie Oil & Gas Co.	23,000,000	
*Prairie Pipe Line Co.	1,350,000	
Gypsy Oil Co. and Gulf P. L. Co.	8,861,285	
The Texas Co.	7 679,842	
Magnolia Petroleum Co.	7,512,366	
Empire Pipe Line Co.	2,869,178	
Cosden Pipe Line Co.	2,863,542	
*Sinclair Crude Oil Pur. Co.	30,725,000	
Carter Oil Co.	15,796,475	
Other lines	3,600,000	
Total August	104,257,688	
Total July	102,351,598	
Difference	1,906,090	

*Estimated. †Includes shipments of Texas crude oil.

Stocks do not include approximately 5,850,000 bbls. held in storage on private tank farms and leases.

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1920	1921	1922	1923
January	56,004	64,460	67.702	75,790
February	68,699	70,054	75,096	71,092
March	67,745	68,555	78,531	76,592
April	64,589	65,036	75,462	75,614
May	63,937	65,466	77,592	77,365
June	68,750	62,438	76,193	77,592
July	66,489	59,486	76,435	71,879
August	63,861	64 888	79,387	76,910
September	68,102	60,110	78,512	
October	65,066	57,688	77,209	
November	62,758	58,470	75,313	
December	60,975	61,000	73,351	

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1920	1921	1922	1923
January	98,835	115,550	119,793	171,067
February	107,146	96,736	111,362	164,219
March	110,777	84,168	127,753	185,487
April	114,090	101,015	127,068	179,751
May	110,219	100,253	127,840	177,102
June	102,598	105,037	137,628	173,598
July	112,340	97,096	137,872	168,330
August	122,296	101,652	153,275	142,766
September	127,131	117,440	158,761	
October	122,891	105,728	165,345	
November	117,730	121,803	165,677	
December	117,201	104,023	172,861	

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines, at the close of each month for the past three years:

	1921	1922	1923
January	7,916,353	16,297,858	14,040,567
February	8,721,878	17,009,293	14,028,437
March	9,818,766	16,877,937	13,873,146
April	10,369,941	16,777,842	13,737,575
May	11,324,694	16,948,962	13,815,622
June	12,328,126	16,810,169	14,541,253
July	13,798,698	16,669,286	14,645,584
August	15,155,633	16,235,229	14,770,539
September	15,525,750	16,228,545	
October	15,761,079	15,757,746	
November	14,971,071	15,171,972	
December	15,854,741	14,323,765	

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

1922—	Receipts	Shipments	Stocks
August	3,190.47	1,196.98	27,348.91
September	2,382.56	3.31	29,728.16
October	3,366.58	4,783.61	29,313.13
November	3,052.75	2,230.18	30,135.70
December	3,076.36	1,292.84	31,919.22
1923—			
January	2,798.55	2,461.36	32,256.41
February	2,692.93	932.33	34,017.01
March	2,978.88	12,417.00	24,578.89
April	3,529.12	3,054.09	25,053.92
May	3,538.73	4,856.42	23,736.23
June	2,937.71	4,743.73	21,930.16
July	2,996.64	1,471.57	23,445.23
August	3,199.07	3,769.34	22,874.96

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Sept. 1	2,360,624.79
Runs from wells	564,688.33
Other receipts	110,482.20
Regular deliveries	230,959.21
Other deliveries	170,067.26

The amount of Illinois oil run by the Tide Water Pipe Line Co. in August was 30,059.61 barrels, and deliveries were 136,193.61 barrels. Adding these figures to those of the Illinois Pipe Line Co., makes the runs and deliveries from the Illinois Field as follows:

1922—	Runs	Deliveries
August	648,827.26	370,461.56
September	595,603.99	407,333.79
October	618,459.82	454,005.38
November	566,508.03	434,681.97
December	552,069.33	391,868.37
1923—		
January	599,239.86	470,958.84
February	496,421.79	382,566.83
March	636,006.81	472,920.76
April	521,910.87	423,548.43
May	624,107.98	523,515.00
June	582,511.82	509,137.77
July	594,653.42	489,269.17
August	594,747.94	367,152.82

The Tide Water Pipe Co., Ltd., also delivered in August 148,792.27 barrels of Oklahoma oil. The total deliveries of all grades by the Tide Water were 482,655.58 barrels.

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for July and August:

	July, '23	Aug., '23
Nat. Transit	205,271.26	206,573.94
S. W. Pa. P. L.	89,547.38	85,306.54
Eureka P. L.	391,285.43	410,033.87
Buckeye P. L. (Macksburg)	274,862.82	275,646.49
Buckeye P. L. (Cleveland)	20,234.29	19,886.44
Buckeye P. L. (Lima, etc)	147,393.66	147,758.37
Indiana P. L.	15,806.29	16,666.55
Cumberland P. L.	239,117.45	436,995.55
N. Y. Transit	16,426.42	16,733.74
Tide Water P. L.	169,959.63	166,005.44
Pure Oil P. L.	193,290.55	191,968.03
Emery P. L.	33,359.18	34,090.37
Paragon Ref.		
Indian Ref.	330,365.95	327,823.64
Swiss P. L.		1,118.94
Pittsburgh P. L.	10,251.17	9,462.79
Riggs Ref.	6,240.68	5,694.44
Paragon Dev.	34,848.70	31,436.65
Total	2,228,260.86	2,384,206.70
Daily average	71,879.38	76,909.89

Note—Indian Refining Co. also reported other receipts of 96,417.41 bbls. Paragon Refining Co. had other receipts of 156,556.10 bbls. Paragon Development Co. had other receipts of 5,401.62 bbls. Pittsburgh Pipe Line had other receipts of 4,667.06.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for July and August:

	July, '23	Aug., '23
National Transit	422,987.76	408,858.25
S. W. Pa. P. L.	277,415.94	294,045.52
Eureka P. L.	130,329.66	118,242.13
Buckeye P. L. (Macksburg)	83,321.65	80,467.88
Buckeye P. L. (Cleveland)	1,326.89	1,018.[illegible]
Buckeye P. L. (Lima, etc)	859,327.54	684,924.[illegible]
Indiana P. L.	993,258.99	993,697.[illegible]
Cumberland P. L.	164,609.79	170,406.[illegible]
Southern P. L.	74,561.48	
Crescent P. L.	120,808.72	93,932.[illegible]
N. Y. Transit	872,734.59	476,987.[illegible]
Northern P. L.	114,617.75	81,021.[illegible]
Tide Water P. L.	162,099.12	197,667.[illegible]
Pure Oil P. L.	188,224.23	181,156.[illegible]
Emery P. L.	33,379.93	36,794.[illegible]
Paragon Ref.	167,863.75	163,631.[illegible]
Indian Ref.	507,240.47	425,606.[illegible]
Swiss P. L.		
Pittsburgh P. L.	14,150.16	10,313.[illegible]
Riggs Ref.		
Paragon Dev.	39,974.19	38,264.[illegible]
Total	5,218,232.60	4,425,744.[illegible]
Daily average	168,330.09	142,764.[illegible]

Gross Stocks

The gross stocks held by various pipe lines in the oil producing section of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of July and August were as follows:

	July, '23	Aug., '23
National Transit	1,186,934.36	1,226,516.[illegible]
S. W. Pa. P. L.	842,268.68	906,483.[illegible]
Eureka P. L.	1,911,916.65	1,881,883.[illegible]
Buckeye P. L. (Macksburg)	563,439.40	510,371.[illegible]
Buckeye P. L. (Cleveland)	15,147.16	14,721.[illegible]
Buckeye P. L. (Lima, etc.)	4,142,367.29	4,054,311.[illegible]
Indiana P. L.	669,665.12	612,562.[illegible]
Cumberland P. L.	704,949.90	729,182.[illegible]
Southern P. L.	836,050.71	980,531.[illegible]
Crescent P. L.	80,556.49	73,288.[illegible]
N. Y. Transit	1,904,719.75	2,066,366.[illegible]
Tide Water P. L.		
Northern P. L.	972,254.68	930,891.[illegible]
Pure Oil P. L.	281,599.52	288,500.[illegible]
Emery P. L.	6,816.20	5,660.[illegible]
Paragon Ref.	188,154.78	167,423.[illegible]
Indian Ref.	319,472.69	302,234.[illegible]
Swiss P. L. Co.		3,361.[illegible]
Pittsburgh P. L.	7,348.66	6,366.[illegible]
Riggs Ref.	259.91	1,141.[illegible]
Paragon Dev.	11,751.59	10,384.[illegible]
Total	14,645,583.54	14,770,538.[illegible]
Increase	104,330.05	124,955.[illegible]

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of July and August, showing the gross stocks of the above fields:

	July, '23	Aug., '23
Pennsylvania	3,577,894.12	3,639,614.[illegible]
Lima	796,589.34	844,112.[illegible]
Kentucky	1,931,679.77	1,978,779.[illegible]
Mid-Continent	8,092,385.07	8,058,066.[illegible]
Illinois	247,035.24	249,966.[illegible]
Total	14,645,583.54	14,770,538.[illegible]

PRODUCTION BY MONTHS AND DAILY AVERAGE PRODUCTION IN THE U. S. FOR 12 MONTHS

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Wyoming Montana	Other Fields	Totals
1922—										
August:	Month	11,845,882	13,366,117	9,234,627	2,638,231	629,870	2,851,628	2,406,251	3,338,142	46,410,[illegible]
	Daily average	382,231	427,907	301,117	85,491	20,770	91,988	77,621	107,683	1,497,[illegible]
September:	Month	12,205,146	12,599,520	8,820,920	2,360,238	688,740	2,796,180	2,447,210	3,438,240	45,360,[illegible]
	Daily average	406,838	419,984	294,364	84,294	22,958	93,206	81,577	114,608	1,513,[illegible]
October:	Month	13,419,432	13,222,151	9,106,994	2,638,875	780,797	2,752,984	2,856,805	3,550,182	48,288,[illegible]
	Daily average	432,885	426,531	293,774	85,125	25,187	88,774	92,155	114,522	1,558,[illegible]
November:	Month	14,035,537	12,613,560	8,676,000	2,646,091	1,023,450	2,529,150	2,903,800	3,305,290	47,637,[illegible]
	Daily average	467,818	420,453	289,200	88,261	34,115	84,305	96,960	106,483	1,587,[illegible]
December:	Month	15,426,810	13,185,416	8,707,931	2,649,900	1,596,500	2,462,291	3,103,866	3,149,445	50,286,[illegible]
	Daily average	497,639	425,336	280,901	85,480	51,500	79,461	100,286	101,595	1,622,[illegible]
1923—										
January:	Month	16,467,445	13,328,574	8,881,004	2,826,611	2,317,002	2,428,013	3,134,707	3,423,516	53,746,[illegible]
	Daily average	530,885	425,817	286,484	91,181	74,742	78,323	100,797	110,436	1,732,[illegible]
February:	Month	16,426,759	12,045,020	7,663,993	2,743,660	2,255,984	1,084,008	2,922,193	2,907,240	48,058,[illegible]
	Daily average	586,670	444,465	273,714	91,622	80,678	67,286	104,364	104,405	1,716,[illegible]
March:	Month	19,608,192	13,955,828	8,462,788	2,847,040	2,970,875	2,312,600	3,274,778	3,464,529	56,896,[illegible]
	Daily average	632,525	450,188	272,993	91,840	95,835	74,600	105,638	111,759	1,835,[illegible]
April:	Month	20,695,959	14,399,610	8,403,240	2,763,052	2,766,000	2,160,300	3,584,048	3,281,340	58,060,[illegible]
	Daily average	689,865	479,987	280,108	89,292	92,200	72,010	116,947	109,378	1,935,[illegible]
May:	Month	21,535,365	15,658,782	8,922,000	2,805,760	3,389,000	2,175,000	3,566,600	3,548,400	61,600,[illegible]
	Daily average	694,689	505,123	288,129	93,535	109,323	70,161	115,051	114,400	1,987,[illegible]
June:	Month	22,667,106	15,572,730	8,817,000	2,797,320	3,078,990	1,981,800	3,385,500	3,401,400	61,702,[illegible]
	Daily average	755,570	519,091	293,900	93,261	102,633	66,066	122,853	113,380	2,056,[illegible]
July:	Month	25,262,082	15,260,184	10,662,000	2,448,566	3,859,000	2,012,000	4,143,400	2,788,600	66,435,[illegible]
	Daily average	814,906	492,264	343,935	78,986	92,226	64,903	133,657	89,955	2,110,[illegible]
	Twelve months	209,588,715	165,106,492	106,478,491	32,075,824	24,558,908	27,576,964	37,729,257	39,494,424	642,609,[illegible]
	Total daily average	574,216	452,347	291,722	87,605	67,285	75,583	103,368	108,204	1,760,[illegible]

AVERAGE WEEKLY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

	Atlantic Ports						Gulf Coast Ports					Total
Av. Bbls. per Week	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	All Ports
March	122,500	102,000	404,027	169,500	291,515	1,089,442	371,400	222,858	290,000		1,044,258	2,133,[illegible]
April	123,333	107,250	382,500	112,500	238,534	964,117	338,750	224,850	284,750	55,400	1,123,500	2,087,[illegible]
May	114,665	126,750	356,500	109,250	153,750	862,915	335,250	237,500	298,500	52,500	924,750	1,787,[illegible]
June	82,800	84,200	389,200	163,400	161,800	787,800	301,000	228,400	212,400	45,800	787,600	1,575,[illegible]
July	71,750	116,250	451,500	112,000	218,750	970,250	367,750	280,000	208,250	23,000	879,000	1,849,[illegible]
August	116,065	89,113	374,613	102,970	197,127	879,888	338,435	266,224	234,388	45,633	1,295,730	2,175,[illegible]

AVERAGE WEEKLY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

	Atlantic Ports						Gulf Coast Ports					Total
Av. Bbls. per Week	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	All Ports
May	114,666	72,000	312,500	191,000	321,333	1,011,499	.....	133,000	86,000	.....	169,000	1,364,[illegible]
June	164,200	32,000	841,200	165,200	161,600	1,164,200	.....	132,800	.....	.....	133,800	1,297,[illegible]
July	110,750	18,750	517,000	185,250	121,750	953,500	.....	139,750	.....	.....	139,750	1,093,[illegible]
August	116,067	51,709	688,485	222,873	151,970	1,231,104	.....	24,612	219,030	.....	243,642	1,474,[illegible]

Cut the High Cost of Doing Nothing

IDLE funds, idle minds, idle plant exact unmeasured tribute from industry. Every hour that a still is shut down to clean or replace tubes means lessened return on the investment and lessened production. It raises "overhead" and stops revenue at the same time. Doing nothing to reduce these periods of idleness unnecessarily narrows the margin between cost and price, which accounts, partly, for the tremendously increasing use of

CALORIZING

to prolong the runs in pressure stills. Calorizing armors steel tubes with a high-temperature-resisting alloy outside and a coke-shedding coat inside. The result is materially increased tube life and less frequent need for cleaning.

Calorized steel pressure still tubes withstand heat action up to at least 1,700° F. of metal temperature and 2,000° F. or over in the surrounding flue gases—hundreds of degrees higher than the requirements of cracking. Plain steel tubes begin to burn out at 900° F.

Decreased coke deposit in Calorized tubes further lengthens runs. Tests show that untreated steel tubes average 35% more coke than Calorized tubes.

Calorized tubes mean longer runs, easier cleaning reduced fuel consumption.

Complete data and evidence are yours for a word. An inquiry will bring you full information.

The Calorizing Company

Oliver Building, Pittsburgh

District Offices:

50 Church St.
New York, N. Y.

224 S. Michigan Ave.
Chicago, Ill.

2-220 General Motors Bldg.
Detroit, Mich.

720 Commerce Bldg.
Kansas City, Mo.

424 West Bldg.
Houston, Texas

August	116,067	51,709	688,485	222,873	151,970	1,231,104	.....	24,612	219,030	.....	243,642

Salute The "Roughneck", Folks
He Makes The Wheels Go Roun

SS 40 LINK-BELTS

HE'S king of the r.p.m.—a big fisted, two fisted, heman who helps to bring in the liquid gold.

While you're crowning King Gas, don't overlook this doughty subject.

Percival of the 12-inch Cigarette Holder—roosting on the cushions back of an Alsatian chauffeur—may think roughnecks are merely tough guys. They *are* tough—physically—but if Percy only knew it, the roughneck makes it possible for him to "burn the boulevards."

Millions of cars and trucks couldn't turn a wheel were it not for the roughneck.

To our minds he is entitled to a big niche in Oil's Hall of Fame. He's a big man in a big game—a game where only stamina survives.

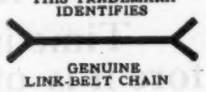
We are offering this minor appreciation of his sterling qualities because we are grateful to the thousands of roughnecks who have made SS-40 and SS-124 such wide successes in every field where oil has been brought in. Their likings for the chain marked with the meaningful double >——< arrow have made Link-Belt the synonym for sturdy service in every point of the compass.

1299

SS40—SS124—Sold by Reliable Jobbers in All Drilling Fields

LINK-BELT COMPANY
INDIANAPOLIS

THIS TRADEMARK IDENTIFIES



GENUINE LINK-BELT CHAIN

SPROCKET CHAIN SS 124

COLUMBIAN
MANILA DRILLING
CABLE

Number 5 in a Series of Advertisements showing the importance of this Banner to Cable Purchasers

This Banner on Drilling Cable means

that this durable Cable can be obtained promptly in every oil field at a National Supply Company Store.

Time is money, as the busy driller knows, therefore it is of utmost importance to him that Columbian Oil Well Cordage is always available the moment the need arises.

Complete stocks of Columbian Cables, Bull Ropes, Sand Lines, Torpedo Lines, etc., are carried at "National" stores wherever extensive drilling is in progress.

Shall we send you a copy of the instructive booklet entitled "Drilling Costs Reduced"? A postcard will bring it.

The Columbian Banner is always sewn on the burlap covering of Columbian Cable.

Sold at all National Supply Company Stores

"Drill with Manila"

By Invitation Member
Emblem of BUSINESS CHARACTER
Rice Leaders of the World Association
Represents High Standing in NAME - PRODUCT - POLICY

Columbian Rope Company

342-70 Genesee Street

Auburn, *"The Cordage City,"* N. Y.

Branches: New York Chicago Boston Houston

GUIBERSON SWAB IN SUCCESSFUL USE

as FLOW PACKER

The GUIBERSON Swab, now rated by many experienced drillers as "the ONLY swab," is also being successfully utilized for other purposes than swabbing.

Prominent among these purposes is its use as a flow packer. It has been successfully used as a flow packer by many operators in the past several months. The swab is simply run on the tubing in reversed position (i. e., upside down.)

The gas pressure opens the cups tightly against casing walls and confines outflow to the tubing.

Used as a flow packer it offers, among many great advantages, the following:

1. It cannot stick, going in or coming out.
2. Its series of cups renders it practically non-leakable, at least one cup being practically sure to have a gas-tight fit, no matter how rough the casing interior.
3. Construction of cups enables them to pass easily and uninjured through badly indented or even partially collapsed casing.

If you are interested in securing an exceptionally efficient swab or flow packer, you should investigate fully this new, patented device.

Order Through Your Supply House

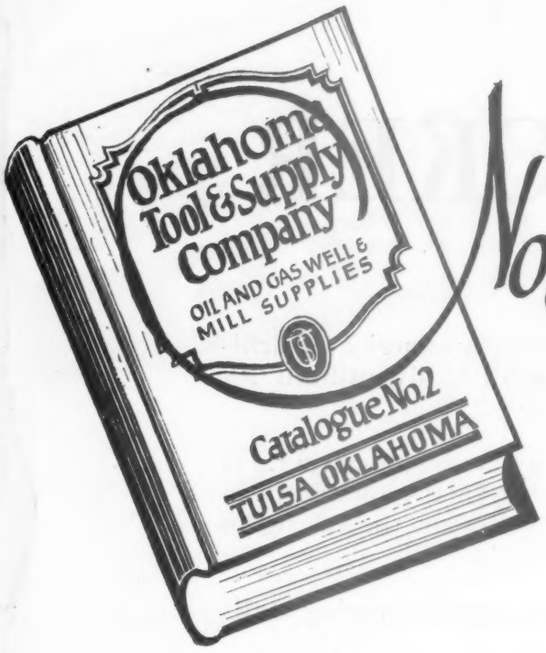
THE GUIBERSON CORPORATION
Box 1106, Dallas, Texas

CALIFORNIA BRANCH: 1737 E. 7th St., Los Angeles, Cal.

314 New Daniel Bldg. TULSA | **825 Mason Bldg. HOUSTON** | **506 Trust Bldg. NEWARK, O.**

GUIBERSON

BETTER BE SAFE THAN SORRY



Now *Is there an* **INTERNATIONAL Catalogue** *on your desk*

BRANCH STORES

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Kansas:
El Dorado
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Madison

Wyoming:
Casper

Montana:
Sunburst

If there is an International catalogue on your desk, don't overlook the fact that our old name—Oklahoma Tool & Supply Co.—is on the cover.

If you don't have this big, profusely illustrated and complete listing of standard oil equipment we will be pleased to forward one on your request.

While describing and illustrating equipment necessary to the oil industry, unfortunately, this book cannot picture the kind of service that is back of the equipment listed—a service that in every way measures up to the very highest for quality of merchandise, speed of delivery and courtesy of store managers and employees, all a very important part of what we deliver with your order.

International Supply Company

Everything for the Oil Field

General Offices and Works — Tulsa, Okla.
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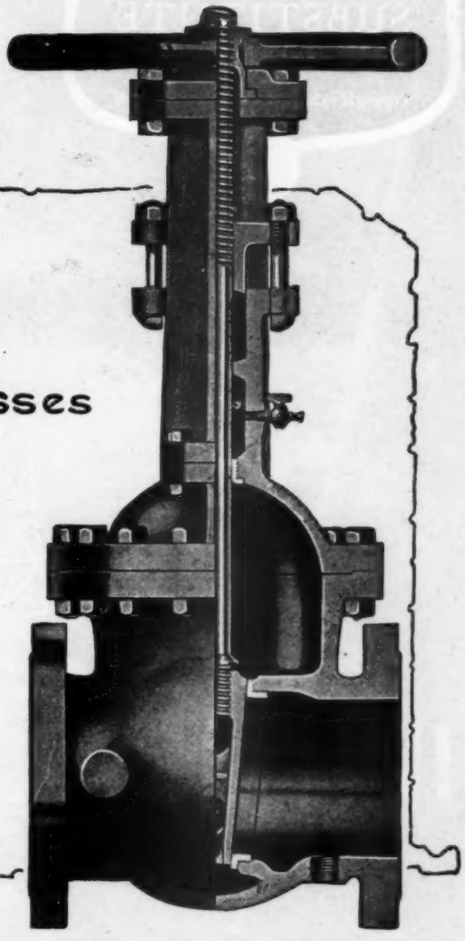
CHAPMAN



Cast Steel
GATE VALVES
For Cracking Processes

Designed and
Constructed for
ALL PRESSURES
and Temperatures
up to
1000 degrees Fahr.

The Chapman Valve Manufacturing Co.
Indian Orchard, Mass., U.S.A.

BRANCHES:

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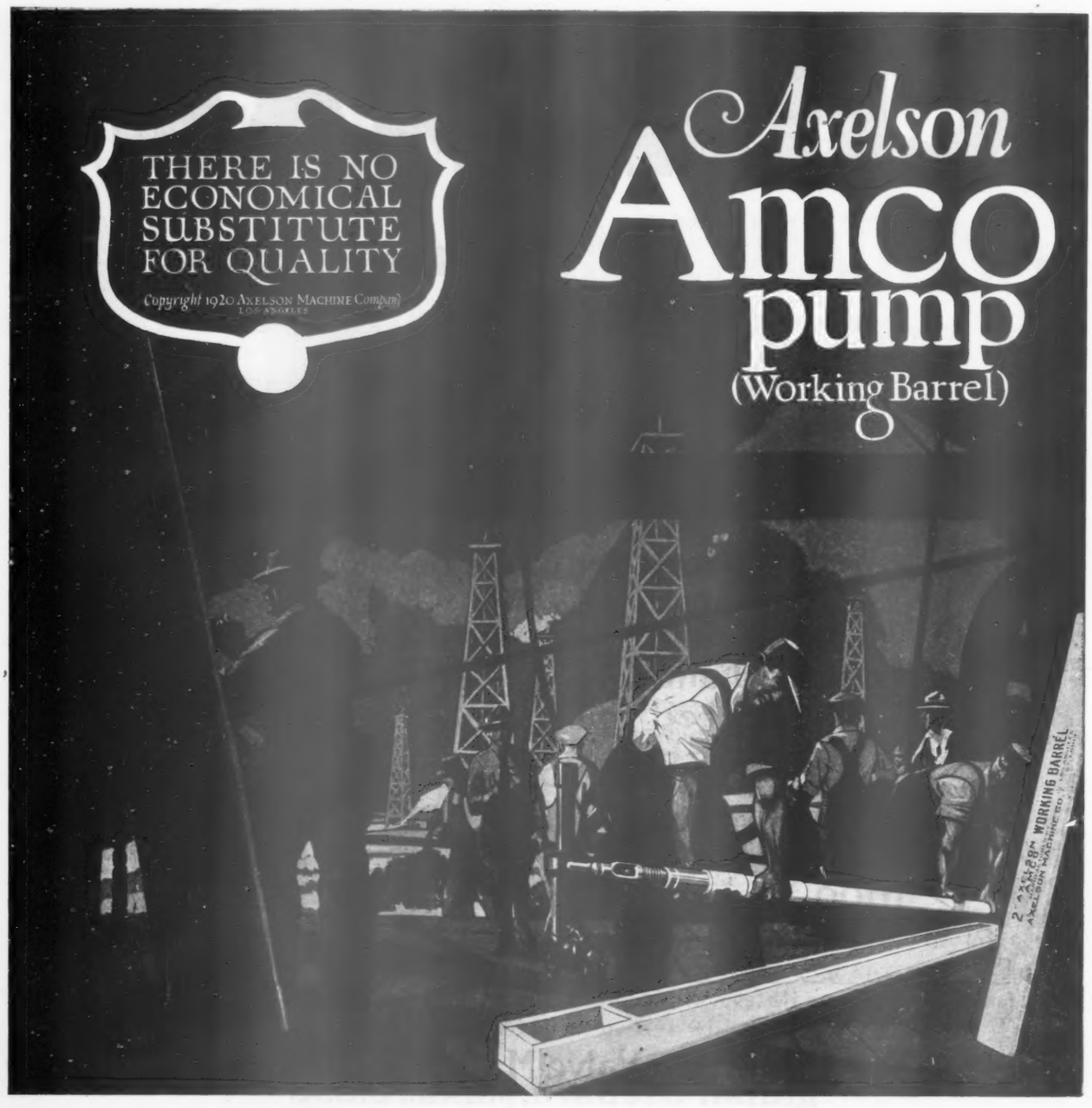
Increase Yield, In Any Field



Time and Money Gone and Lost, ---Would Far Exceed the Amco Cost!

Frick-Reid Supply Company will give your orders QUICK ACTION. Just tell 'em to send a trial order over to your lease.

Axelson Machine Co.

Los Angeles St. Louis

Mid-Continent Office: 520 Kennedy Bldg., Tulsa

What Does It Cost

To Drop A String of Tubing

?

It may mean only a short-time fishing job or months of delay, wasted wages, and enormous losses in oil.

As long as you "buy pipe on price" you never need to guess—you'll know the cost each time your tubing parts

READING IRON COMPANY
READING, PENNA.
Oil Well Supply Co., Distributors

READING
GUARANTEED GENUINE
WROUGHT IRON PIPE

MOST A QUARTER of A CENTURY of FIELD EXPERIENCE HAS BUILT THE GUMBO BUSTER LINE

See the big "Gumbo Buster" Rotary Rig in operation at the exposition

A Rotary outfit capable of drilling to a depth of 7000 ft.

It will be running full blast. Rotary, new design Twin cylinder engine-new design roller bearing traveling block-pump-crown block-draw works- a complete and typical "Gumbo Buster" outfit--

AMERICAN WELL & PROSPECTING CO.
CORSICANA, TEXAS—LOS ANGELES, CAL.

GUMBO
TRADE MARK REGISTERED
BUSTER

REPUBLIC SUPPLY COMPANY, Sales Agents
TEXAS OKLAHOMA ARKANSAS LOUISIANA

The First Full Diesel Used on a Pipe Line was a Worthington

The first Diesel oil engine used for driving a pipe line pump was a 300 H. P. Worthington horizontal four-cycle Diesel. The same Company that purchased this engine bought other Worthington Diesels aggregating over 19,000 horsepower.

WORTHINGTON PUMP AND MACHINERY CORPORATION

Executive Offices: 115 Broadway, New York City. Branch Offices in 24 Large Cities

W-213.0

WORTHINGTON

Deane Works, *Holyoke, Mass.*
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Hazleton Works, *Hazleton, Pa.*

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Power & Mining Works
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Snow-Holly Works
Buffalo, N. Y.
Epping-Carpenter, *Pittsburgh, Pa.*

The Cost of Valve Cups is a Small Item —The *Choice* is of Utmost Importance

Valve cup **performance**—not **price**—**determines** what you really pay for the valve cups you use.

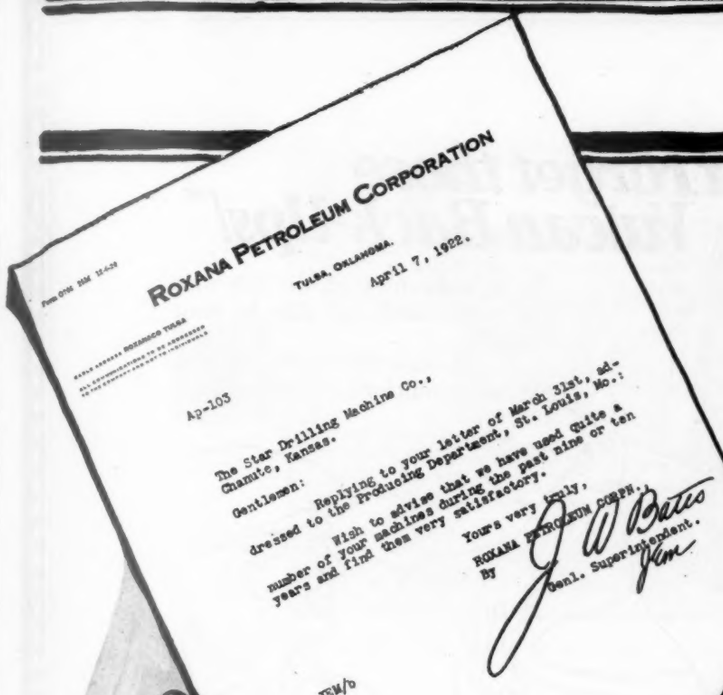
Buy your cups as carefully as you build your rigs—choose them as you select your drill crew. Look for the Darcova label—the guarantee of long efficient service, the mark of the first composition valve cup to enter the field.

Re-cupping means wasted labor, time and oil—profits turned to losses. Cups that may look **good enough** prove **good for nothing** when the strain comes.

Darcova performance is an old story to men throughout the oil fields. For fifteen years the old reliable orange label has saved them money and pipe trouble.

DARCOVA VALVE CUP

The Original Composition Cup


ROXANA PETROLEUM CORPORATION

TULSA, OKLAHOMA.

April 7, 1922.

Ap-103

The Star Drilling Machine Co.,
Chanute, Kansas.

Gentlemen:

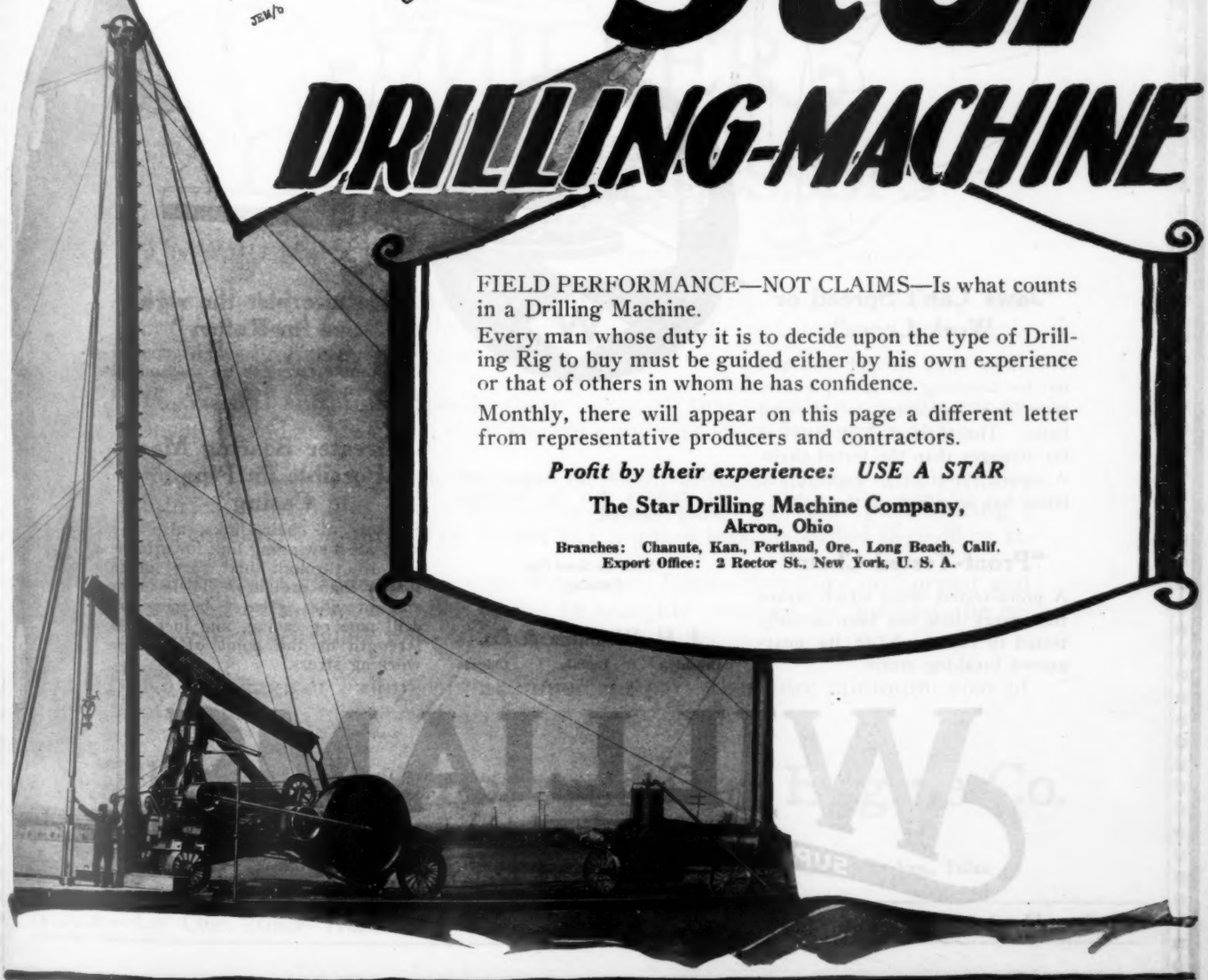
Replying to your letter of March 31st, addressed to the Producing Department, St. Louis, Mo.:

Wish to advise that we have used quite a number of your machines during the past nine or ten years and find them very satisfactory.

Yours very truly,
ROXANA PETROLEUM CORP.,
By J W Bates Jr
Genl. Superintendent.

JEM/o

The "Star" DRILLING-MACHINE



FIELD PERFORMANCE—NOT CLAIMS—Is what counts in a Drilling Machine.

Every man whose duty it is to decide upon the type of Drilling Rig to buy must be guided either by his own experience or that of others in whom he has confidence.

Monthly, there will appear on this page a different letter from representative producers and contractors.

Profit by their experience: USE A STAR

The Star Drilling Machine Company,
Akron, Ohio

Branches: Chanute, Kan., Portland, Ore., Long Beach, Calif.
Export Office: 2 Rector St., New York, U. S. A.

"Say Boss Don't Forget those Vulcan Back-Ups!"

So says the man on the job who has once tried out this he-man wrench.
It is scientifically built for the hardest conditions—a real tool for the job.

"Jaws Can't Spread or Work Loose"

The extra large through bolt and nut for fastening the jaws prevents them from spreading, or working loose. The through bolt itself is far stronger than the tested chain. A strain sufficient to rupture the latter has no effect on the bolt.

"Proof-Tested Chain"

A proof-tested chain which means that every link has been actually tested to two-thirds of its guaranteed breaking strain.

Longer chains for larger sizes of casings can be supplied when required.

Shall we Send Our Catalog?

J. H. Williams & Co.
Brooklyn Buffalo Chicago

"Handle just the right size for Rotary"

The short stubby handle is supplied with ample strength by the special grade of stiff steel used in the manufacture.

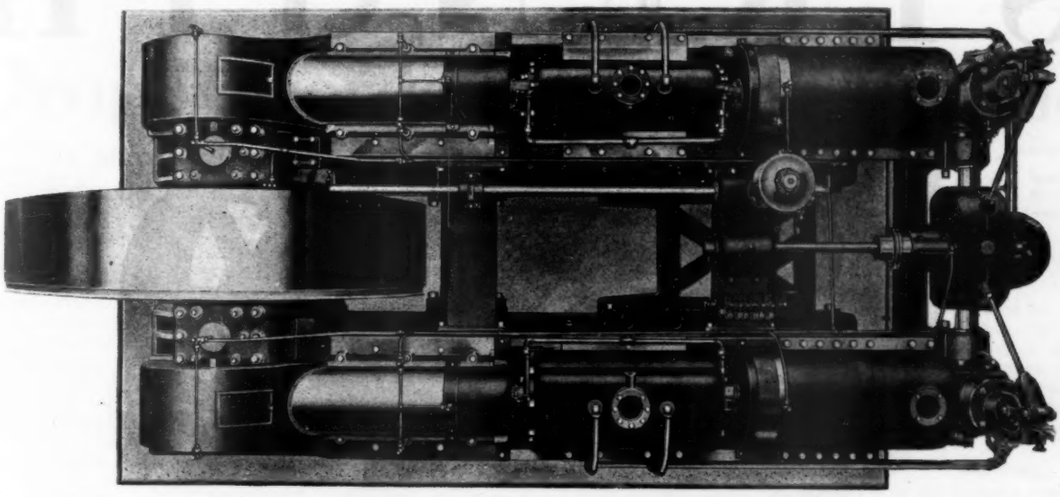
"Greater Bearing Made Possible on Pipe or Casing"

Six sets of chain links, also the alloy steel swinging link for attaching to through bolt, are much longer than ordinary. Their extra size provides greater bearing on drill pipe or casing, and increased strength at the point of greater working stress.

WILLIAMS

SUPERIOR DROP-FORGED TOOLS

VULCAN BACK-UP WRENCH



Birdseye view of Watts-Miller direct gas engine driven compressor for natural gas. This shows the new style completely enclosed unit

MILLER Gas Compressors

The Watts-Miller gas engine driven compressor has these features:

Main Shaft has two bearings only and is perfectly straight, having side cranks—therefore mainshaft is unbreakable and crankshaft and main bearing troubles are entirely avoided.

Horizontal and Slow Speed—therefore at all times easily accessible for inspection and adjustment; slow wearing and free from bearing troubles.

Four Cycle—therefore will carry full load without heating and cylinder lubrication troubles; water injection not required to prevent "prematuring"; gas consumption only 10 cu. ft. per H.P. hour or less, instead of 18 to 20 cu. ft.

Removable Cylinder Liner with Expansion Joint—therefore no burned and cracked cylinders; cylinder jacket thoroughly cleaned by pulling the removable liner when mineral matter accumulates.

No Breakage or Failure of any important part, therefore minimum cost of maintenance.

The Miller Improved Gas Engine Co.

Factory at Springfield, Ohio

Branch Sales Office and Warehouse for Service and Repairs: 323 North Cheyenne Ave., Tulsa

NOTE—Go One Block North and One Block West from Petroleum Exposition to Our Office

STRENGTH

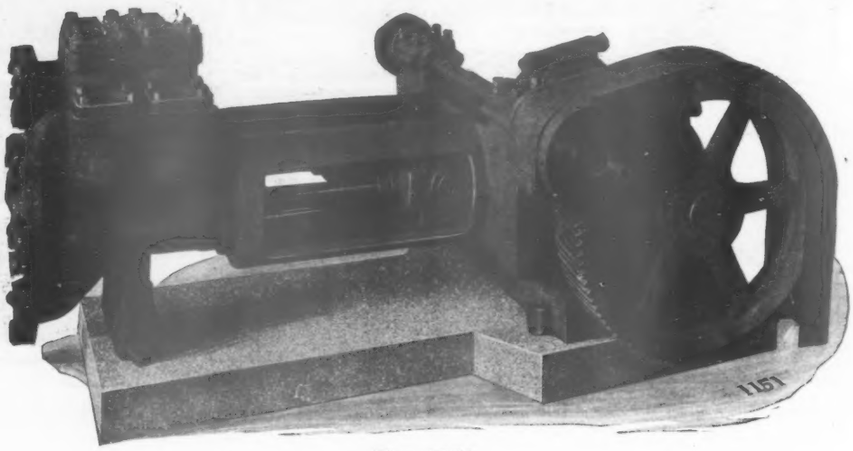


Fig. 1151

6 x 12" Slush Type for 250 lbs. working pressure. 245 barrels per hour.

Steel or bronze rods, cast iron or brass liners, and cast iron or brass pistons, as desired.

It only requires a glance to see great strength in every line and curve of this pump

Built strong like all

Transit Pumps

to stand both use and abuse in the oil fields

Bulletin 105-A lists sizes and capacities

NATIONAL TRANSIT
PUMP & MACHINE CO.
OIL CITY, PENNSYLVANIA

District Offices: **New York Philadelphia Pittsburgh Cleveland Kansas City Houston Denver**